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VOLTA REVIEW

VOL. XVI JANUARY, 1914 NO. 1

HARMONIC GYMNASTICS

A Means of Improving the Voice

By HELEN LOUISE DYER

THE DEVELOPMENT OF SPEECH AND SPEECH READING

By A. J. STORY

THE VALUE OF SYLLABLE PRACTICE IN SPEECH READING

By MILDRED KENNEDY

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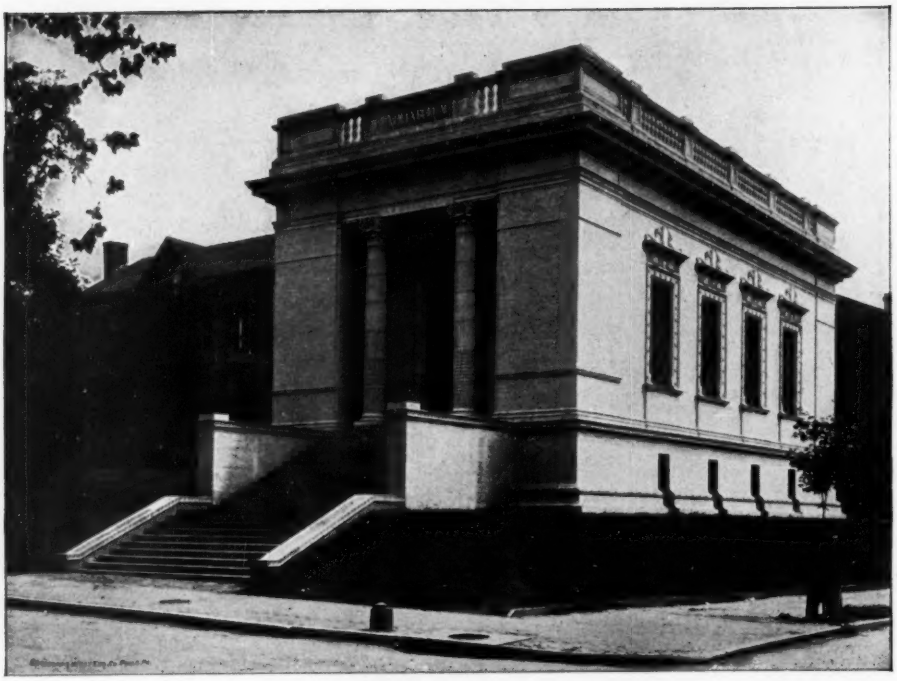

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Volume 16 JANUARY, 1914 Number 1

HARMONIC GYMNASTICS

A Means of Improving the Voice, Health and Personal Appearance

BY HELEN LOUISE DYER

In the hope that other teachers may become interested in the system of Harmonic Gymnastics as taught by my assistant, Miss Helen Louise Dyer, I have asked her to prepare this article. For many years I have used the principles of Harmonic Gymnastics with my pupils and have found them of inestimable value in training of the voice and the use of speech. They have formed a part of my course for teachers and their value has been greatly appreciated, for in them are the underlying principles of our work.—Sarah Jordan Monro.

THE person who has the most perfect control of his body is the one who will reach the highest standard in all lines of work. If the body and the mind fail to work in coördination, the chaotic activity which results will handicap the best trained thought. It is strange, therefore, that we permit these complicated machines which we call bodies to become our masters when we find it so easy to handle other machines over which we would not seem capable of acquiring so much control.

There are many reasons why the body should be freed from all constrictions and each part placed under the guidance of the mind, but the most obvious advantages are those of improving the health, the voice, and the personal appearance.

UNDUE STIFFNESS

A person acquires the habit of holding his neck stiff and straight while walking. Perhaps he has had military training, or he may have been told that he must keep the back of his neck "pressed against his collar-button" to insure an erect carriage. After a time he finds that he is troubled with nervous headaches; his throat may become tired much more easily than it did once, or he may not sleep so well because he gets cramps in his neck when he moves about. Does he realize that he is strangling the nerves and blood-vessels by holding his head stiff? Usually he takes medicine for the throat or head trouble, and in many cases contracts the habit of carrying his shoulders more rigidly, so that he will not feel the uncomfortable strain in his neck.

Take the matter of personal appearance. Some of the most graceful movements in nature are those of the cat, because each one blends into the other in an imperceptible sequence, each part of the body being freely movable. We say of an exquisite dancer that she does not seem to have a bone in her body, by which we mean that she has freed each portion so that she can direct energy through each part without making the transition evident. Observe the gestures of an orator or actor. We will find that one saws the air with his full arm windmill fashion, entirely ignoring the existence of joints. Now, watch another per-

"FLYING MERCURY"
Proper poise maintained even in violent action

son and see how the action starts in the shoulder and is communicated through the whole arm to the tips of the fingers, rapidly, to be sure, without a hitch or jerk. The gesture follows the natural law of growth—from the center to the surface.

INFLUENCE UPON THE VOICE

The influence of a free body upon the voice is so obvious as hardly to need explanation. The entire body acts as a resonator for the voice. If one portion is constricted the vibrations cannot flow freely and the quality of the tone must suffer. More important still is the fact that tense muscles interfere with the freedom of the breathing. But the most common result of constriction is found in the throat and mouth. The much-discussed "ministerial sore throat" is nothing more nor less than fighting against constrictions. Through this condition we get the harsh, husky, throaty, or abnormally high qualities of tone, some of which are usually found in a deaf person's speech.

Through his very effort to establish communication with the world the deaf child is peculiarly liable to become constricted, and thereby add one more handicap to the many under which he is struggling. Unnecessary exertion, merging into tension, not only impairs the health, but it becomes impossible for the teacher to do justice to the methods of teaching speech. The procuring of freedom and relaxation of all parts should be a regular preparatory exercise for all speech work. The child's very desire to do as he is told will often defeat his purpose, for his breathing becomes unnatural and every nerve is tending to contract the muscles which it controls. The teacher can confer no more valuable and lasting benefit upon a pupil than by establishing in his mind—in his very instinct—the principles of preparatory relaxation.

In order to develop this highly desirable condition we must begin where all activity and growth are initiated—we must find the center. The greatest freedom results from movement around a fixed axis or center. Experiments have proved that the axis for the body falls in a straight line from the notch at the top of the sternum through the arch of the foot when the body is erect.

NORMAL ADJUSTMENT

The process of acquiring this correct relation of the parts is called, in harmonic gymnastics, normal adjustment. It is of the greatest importance that this point should be firmly fixed in the minds of the pupils before they are given further exercises, for these may do more harm than good if the parts of the body are not in their normal relation to each other.

Let the pupil stand with arms hanging at the sides. Direct him to move the entire body as a mass, *not* the chest or feet alone, until a line drawn from the notch at the top of the sternum straight to the floor would fall between the feet at a point corresponding with the arch of the foot. The possibility of doing this may be illustrated by showing the pupils the attitudes of the famous figures in painting or sculpture. The "Winged Victory" is a particularly fine example of perfect adjustment of the body. The pupils may be shown that in some postures the line may be unable to pass through the whole body, as is the case when the person stands erect with heels together, but the notch of the sternum must always be directly over the arch of the foot in order to give proper poise. The "Flying Mercury" may be cited as an example illustrating this point, and many others of equal value may easily be found. In ordinary running this relation is always preserved. One foot follows the other in providing the base of support in the same relation to the rest of the body.

HARMONIC EXPANSION

Another point which must be established at the beginning of the training is that which is known as the harmonic expansion of the torso. The majority of people expand and contract the chest to

some degree in ordinary breathing, but few realize that activity in the upper chest is a sure sign that they are not breathing deeply enough. By its very construction we are shown that the upper part of the chest could not have been intended for the degree of activity it is often called upon to assume. The lower ribs are left free to respond to the activity of the diaphragm, but the upper ones are comparatively fixed and should be allowed to remain so.

Let the pupil place one hand on the chest about 2 inches below the notch of the sternum, and the other hand on the back across the lower part of the shoulder blades. Expand the chest by muscular effort to the greatest capacity and note that there is activity in the back as well as in the chest. Hold this expansion and breathe freely. For many this will prove a difficult task at first, because the diaphragm and the intercostal muscles are not accustomed to doing their duty and need to be trained to it. Preserving this chest expansion at all times is of inestimable value in preserving the health by giving the lungs all the room possible and by deepening the breathing. It is even more valuable for its psychological effects. Try to feel hopelessly discouraged or utterly indifferent when the chest is fully expanded and the head held high (as it will be by force of example). Won't the pupils attack their difficult problems more vigorously—yes, and have more self-respect if the body is carried as it should be?

FIG. I. THE PUPIL ASSUMING THE CORRECT STANDING POSITION

Dotted lines show the incorrect position

THE BODY AS A MASS

Having established a correct relation of the parts, we begin by working with the body as a mass.

The pupil stands erect and with good normal adjustment and expansion as in the previous exercises. With the weight on the balls of the feet, he may now rise very slowly, feeling as though some force were pulling from the ceiling. Now, let him descend slowly, being careful not to let the weight drop back to the heels. The pupil should be able to rise on the toes again without having to make the slightest change in the placing of the weight.

As a secondary exercise under this head, let the pupil transfer the weight from the balls of the feet to the heels, the only activity taking place in the ankles as the body sways. The pupil must be careful not to move the hips during this transition. Continue this exercise until the person gets the sensation of swaying like a pendulum. It ceases to be an exertion and becomes an exceedingly soothing rhythmic exercise.

THE STUDY OF UNITY

Up to this time we have considered the adjustment of the body when taken as a whole. We must now progress to the movement of the parts about the established center or axis, and this step is called the study of unity. All parts of

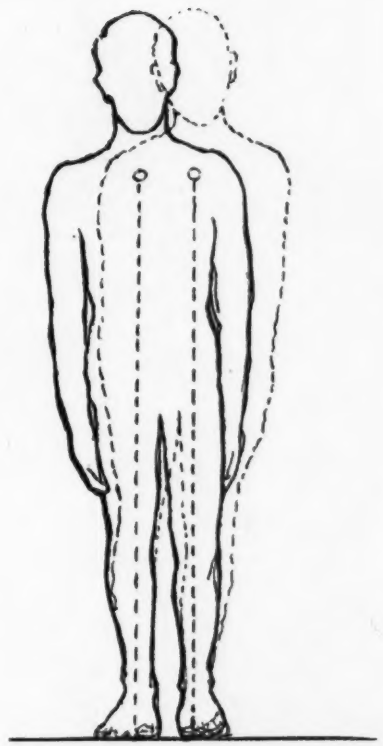


FIG. 2. TRANSITION OF WEIGHT FROM TWO FEET TO ONE FOOT

the body must move in harmonious relation to each other and to the center. It is the test of good poise.

The pupil should assume the correct standing position and then transfer the weight to the right foot. The line from the notch of the sternum now falls directly through the arch of the right foot and all parts must adjust themselves to this new position, leaving the left foot and leg as free and as unnecessary for support as if they had been completely detached from the body. Having established perfect stability and poise on the right foot, place the left foot at the side—far enough to give a fairly wide base—and transfer the weight very slowly to the left foot, leaving the right foot as free as the left one was in the first position. It is well to test the poise of the pupil by requesting him to lift the free foot and move it about without in any way affecting the position of the rest of the body. Transfer back to the right foot and continue this alternation until it can be done very slowly, without the slightest jerk as the parts adjust themselves.

Give the same exercise with the free foot placed forward and the weight carried to it, then with the foot placed backward.

LIBERATING EACH SEPARATE PART

By this time the pupil has sufficient control of his body to enable him to take up the great and all-important step of liberating each separate part, so that it may be perfectly free to act alone or in harmony with other parts.

We begin with the head and work downward.

Direct the pupil to let his head drop as far forward as it will go, giving up all activity in the neck. Be sure that the pupil is not placing it forward instead of dropping it. Frequently, through long-established habits of holding the neck stiff, this exercise will prove very difficult and even painful at first, but it is absolutely necessary that the vertebræ at the back of the neck should be stretched apart, so that the nerves will have the proper amount of space in which to work. Also the muscles will be found to be badly in need of stretching to relieve their tension. Many headaches may be cured in this way.

Now, drop the head backward as far as it can go. This frees the throat and at the same time compresses the back of the neck, thus giving it a sort of massage. In the same way drop the head over the right shoulder and then toward the left, taking care that the face is kept directly toward the front. This exercise frequently reveals serious muscular trouble in the shoulder or neck, which may need more careful and thorough attention than can be given in class.

As soon as these four motions are comparatively easy, let the pupil drop his head well forward and then allow it to rotate toward the right shoulder, across the back, over the left shoulder, and

FIG. 3. HEAD DROPPED BACKWARD

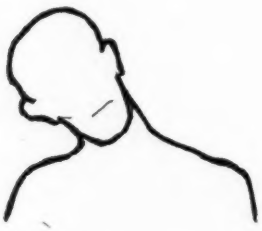


FIG. 4. HEAD DROPPED OVER SHOULDER

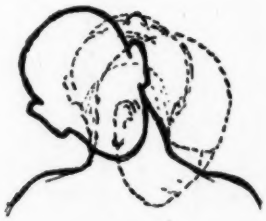


FIG. 5. HEAD ROTATED

down in front. The head should be so free that it will give the impression of rolling around without any muscular activity whatever.

The writer knows no better cure for insomnia than to take this exercise slowly, alternating in starting toward the right and toward the left. The entire face should be relaxed, the mouth falling open and the eyes tending to close.

FREEING THE JAW

Attention should now be directed toward freeing the jaw, that particularly stubborn member.

Let the jaw drop as if from its own weight, while the whole face relaxes sympathetically. Because of its constant hard work the jaw muscles are very strong and do not easily give up their control, so much practice should be given in simply releasing it. When this has been accomplished, drop the jaw and shake the head from side to side. If the jaw is free the pupil will feel it actually "flop" from side to side.

Having freed the neck and the jaw, the teacher may feel that she has taken several long strides toward improving the speech of her pupils.

THE ARMS

We will now take the work for the arms, and this naturally begins with the shoulders. Direct the pupil to raise his shoulders as high as possible, letting his arms hang like ropes. Drop the shoulder to the normal position. This should be repeated several times. Now, the shoulder should be brought forward as far as possible, raised, brought downward and backward, and forward again, making a complete circle. The exercise may be taken with the initial movement either forward or backward, but always end with the backward movement.

Letting the arms hang at the sides, raise the upper arm out at the side by the action of the shoulder muscles, and take care that the activity does not extend into the elbow or the forearm. Raise the upper arm in front of the body in the same way.

Next raise the upper arm as before and let the forearm follow it. The hand is left lifeless.

The third time the hand also is raised, but the fingers are still relaxed.

For the fourth exercise begin with the activity at the shoulder and let it extend down to the tips of the fingers, vitalizing one part at a time, but with smooth transitions from one to the other. When the entire arm has been extended, begin to relax in reverse order—fingers, wrist, elbow, and shoulder dropping in sequence. Take this exercise in front, at the sides, and over the head.

LIBERATION OF THE SPINE

We now begin on a particularly important point, the liberation of the spine.

FIG. 6. RELEASING THE JAW

FIG. 7. ROTATION OF SHOULDERS

Few of us realize the extent to which our spines become stiffened through habit and disuse. The lower part in particular becomes rigid, and the exercise of stretching forward and touching the floor as given in organic gymnastics is not sufficient to relieve this condition.

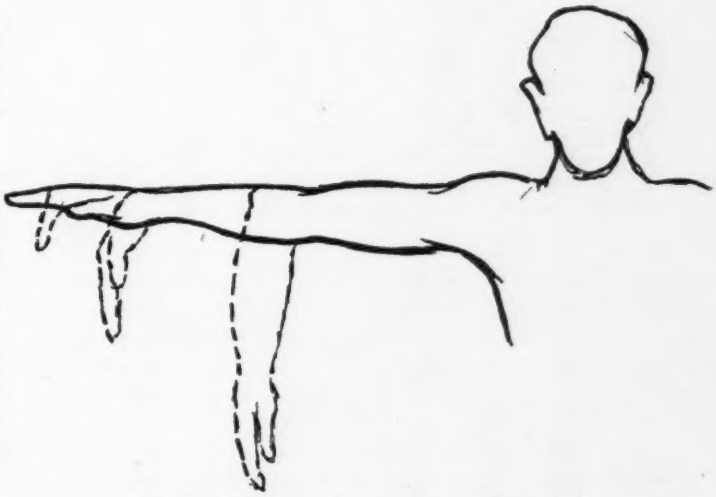


FIG. 8. EXTENSION OF THE ARM BY SECTIONS

The pupil should stand erect, with good normal adjustment, and relax the neck, letting the head drop forward as far as possible. Now, let the spine relax little by little until the body is literally hanging from the hips, all parts in complete relaxation. To regain an upright position, begin to vitalize the spine at the lower end and let it become erect as slowly as it went down. The complete straightening of the spine will bring the head into position and the shoulders will drop naturally into place. This exercise may also be practiced while the pupil is sitting, letting the torso drop forward on the lap. As a cure for general nervous tension no better exercise could be devised.

Having liberated the upper part of the body, we now turn to the lower part and begin with the hips. The best way to give the sensation of freedom in this part is to let the pupil stand on the edge of a stair, platform, or even a box. Let one leg swing free, absolutely relaxed, and note the great increase in length which results. Alternate from one foot to the other until the feeling of freedom is well established.

In order to relax the knee, the upper leg should be extended at a right angle with the body and the lower leg allowed to swing freely from the knee. Let the whole leg drop. The foot will not resume its former position, for the muscles of the hip are free and the leg appears to be too long to stand beside the other one. If the foot falls with a slam there is muscular activity present.

The exercise for freeing the ankle may be taken in the same manner, letting the foot hang heavily while the knee is being liberated. Freedom of the ankle may also be tested by crossing one knee over the other while sitting. Shake the leg from the knee downward and see if the foot moves independently.

FIG. 9. LIBERATION OF THE SPINE

FIG. 10. LIBERATION OF THE HIP

IN COMMAND OF THE BODY

Having mastered these exercises, a person is in full command of his whole body if the mind is normally capable of direction. He can call upon each part to act separately or for several parts to work in harmony because he has learned to differentiate. His nerves are no longer choked by abnormal constrictions, and he has discovered that it is not necessary to move every part of the body in order to use one section, so he accomplishes more with less fatigue. It is easy to show a person that he can speak much better when his body is perfectly free and at ease than he can when every muscle is tense from sympathetic effort. Teach him that he can pay just as good attention in class when he sits easily and naturally, with his *mind* alert, as when his entire body is constricted with eagerness or the fear of losing a word.

And to all who suffer from nervous headaches, from cramped, constricted muscles, or from general awkwardness, the training in harmonic gymnastics offers untold relief. Whatever brings us nearer to the normal increases our efficiency, and we were intended to move and act as freely as any wild animal in his native forest; to rest with as complete relaxation as a cat sleeping in the sunshine.

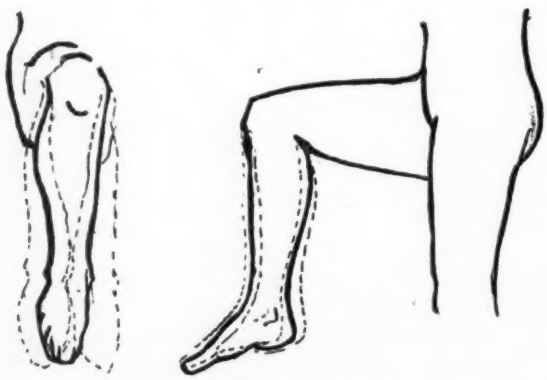


FIG. 11. LIBERATION OF THE KNEE (FRONT AND SIDE VIEWS)

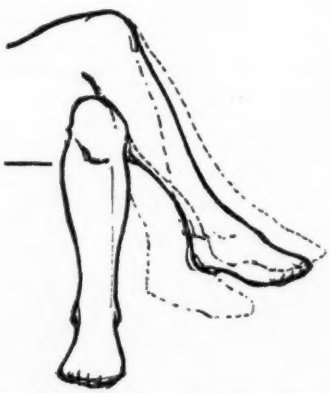


FIG. 12. LIBERATION OF THE ANKLE

THE DEVELOPMENT OF SPEECH AND SPEECH READING*

BY A. J. STORY

IT IS many years since a paper on Speech and Speech Reading was read at a conference of teachers of the deaf in this country. The fact that such a paper is to be considered at this meeting is a striking testimony to the progress professional thought has made within recent years. It means that, after considerable experience in its practice, the oral method of teaching the deaf, when stripped of all that does not scientifically belong to it, is still found to possess sufficient elements of truth and reality to justify its survival and its expansion. If there were ever any real question of methods, that question has settled itself, and not a voice worth noticing is now raised against the attempt to endow the lips of the deaf with speech and to train their eyes to see the speech they cannot hear. The effort everywhere is now to perfect the methods of developing speech and speech reading; to adapt them to the physiology and the psychology of every deaf child capable of acquiring them, so that they may become more truly serviceable as the agents of intellectual impression and expression in the lives of the deaf; and it is proper that this aspect of oral work should receive consideration at this time.

THE ERROR OF MILAN

It is a strange reflection that while the International Conference of Milan, in 1880, so strongly advocated oral methods of teaching and gave so intense a stimulus to their spread, it should, by declaring at the same time that the most favorable age for admitting deaf children into schools for such training was that of eight years, have set up the very condition which more than any other has led to the limitation of oral results. The State, too, in a slightly less degree, has repeated the fundamental error of Milan, for while the Board of Education in England has adopted the recommendation of the Royal Commission that every deaf child should have an opportunity of showing fitness to be trained on oral lines, Parliament has unnecessarily limited that opportunity by fixing the age of compulsory school attendance at seven years. This already too-late age of admission is perhaps more often "honored in the breach than the observance," for children, even now, enter school at eight, nine, ten years of age or later.

A far truer voice now sounds from Milan. Professor Ferreri, of that city, has proclaimed, in terms that can neither be mistaken nor gainsaid, "the results of oral instruction stand in direct relation with the early training of speech—the earlier the better." The accumulated experience of the past decade or so bears witness to the truth of this declaration.

Following upon the conference of Milan the spread of oral methods in this country was rapid. There had been no proper preparation for them. Speech and speech-reading were introduced into our schools at a time when the prevailing conditions were not favorable to their adequate development; nor can it be said that the physiological and psychological premises of their culture were generally really and fully grasped by those who sought to develop them. The late entry into school, the brief period of instruction, large classes, crowded school-rooms, the inadequacy or absence of suitable facilities for the training of teachers and certifying their special competence, did not constitute even moderately efficient conditions for oral teaching, nor indeed for any other.

More suitable conditions have evolved themselves and the process is still going on. We have secured the earlier admission of children into schools, smaller classes, a longer school period, separate class-rooms, and to some extent the qualified teacher. But other things re-

* Read at the Eighth Biennial Conference of the British National Association of Teachers of the Deaf, Glasgow, Scotland, July, 1913.

main to be achieved. Among them are an even earlier age of admission into schools, the proper enforcement of the law relating to admission, and a fully adequate and efficient provision for the training of the specialist teacher of deaf children before he is placed in responsible charge of a class in order to prevent the knowledge of the teacher being gained at the expense, often permanent, of the children.

THE EARLIER THE BETTER

While the conditions for oral teaching have been improving, experience has been accumulating to indicate not only the most suitable procedures for the physical perfection of speech, but further, and even more important to the ultimate result, the true psychological bases of the method. All is included in Ferreri's declaration, "The earlier the better."

Early life, or from the age of two to that of seven, is the vital period of speech and language acquirement in hearing children. It is then that the faculties of interest, curiosity, and the desire to know are budding; and largely the ultimate intellectual condition, as well as the physical, is decided. It is during this period that the hearing child stores up his impressions of speech and gradually learns to reproduce them as the means of his own self-expression, so that by the time he comes under the teacher's care he has a very serviceable stock of spoken language for his subsequent development.

The vast majority of deaf children feebly struggle through this vital period of intellectual life with simple gesture, faintly understood, as their only means of impression and expression, while those who hear shine in the glory of continuously expanding speech and language, with all the immense intellectual advantages these represent. This is a loss, which if incurred can never be made up to the deaf child, whatever be done, and this unnecessary intellectual wastage must and largely can be prevented.

SPEECH ALONE POSSIBLE

The proper treatment of the deaf child between early infancy and the dawn of school life will practically indicate very closely the method by which his education should be conducted. The child is born into an environment of spoken language, and it is clear that the medium through which he may get into touch with that environment must be the language of his fellows. That language may be represented either in speech, finger spelling, or writing; but for the young deaf child no form is so suitable as the spoken, and indeed no other is possible.

Speech has two elements: the phonetic, or its appeal to the ear, and the kinetic, or its appeal to the eye and to touch. The physiological condition of the deaf child shuts him off from the evidences of speech to the ear; but he may see sufficient of its movements to grow to recognize meaning from them, and later on come to appreciate for himself, through the muscular sense, these movements in the personal production of speech to express his mind. It is by this acquaintance with speech, through sight and touch, that he must learn to recognize it in others and form it for himself, and he may commence the practice very early—the earlier the better.

It is a truism, widely accepted in these days, that speech must be developed through its use if it is to assume its proper relation toward the intellectual life of the individual. It cannot be satisfactorily developed in any mere academic way. It must continuously demonstrate its purpose and value to the learner in enabling him to set up contact with the surroundings that so much fascinate him. He must really *discover* himself in it.

The child's first acquaintance with speech must necessarily come from the outside; he must extract meaning from it when used by others to him. This is a necessary period when the brain is storing up impressions to be used for personal expression at some subsequent time. It is the seed time before the harvest of speech. In hearing children this stage may cover a period of months or even two or three years.

THE MOTHER THE FIRST TEACHER

The deaf child must be given this vital period of impression through speech,

which means that speech-reading must precede speech. Instead of gradually learning to associate certain sequences of blended sounds with the objects or actions they represent as the hearing child does, the deaf one must and can be trained to associate in simple and suitable ways the visible movements that produce speech with the actions or things that speech indicates. This training cannot be undertaken too early in life. No one is better qualified for this important work, and indeed no one else is available at this point of life, than the mother, the God-appointed first teacher of the child. She should encourage the little deaf child to look at her while speaking and to attempt to understand the facial indications of her simple speech. She should not attempt to *teach* speech, and she need know very little of its science. In appropriate ways she should give the deaf child at least an equal opportunity to that she naturally gives to the others who can hear, of growing to understand her; and surely, even if the little one cannot at the time respond in vocal form, her joy will be no less when she finds that in spite of deafness she can in simple ways reach the imprisoned mind. The only instruction that need be given to such a mother is to talk to the child in the simplest terms of things that interest and attract, to talk slowly and without exaggerated muscular action. In this way she will lay the foundations of intellectual life and best prepare the child for expressing himself in speech later on. I have witnessed the enormous value of this simple maternal service to the deaf child in the efficiency of the subsequent speech and speech-reading as the indication of a much more advanced intellectual status than could have resulted had infancy been wasted. The so-called failures of speech and speech reading are more often than not merely symptomatic of a previous and greater failure to give the deaf child an intellectual infancy during physical infancy, and everything that can be done by whatever means fails to a greater or less extent, when it seeks to remedy this initial and fundamental want of harmony in development.

But if this essential period of impression through speech has not fallen to the lot of the deaf child before school life it cannot be evaded during it. It is a natural law and cannot be disregarded without the exaction of the penalty that follows the disturbance of any natural sequence of growth or development. Even if the teaching of speech be at once undertaken upon entry into school, its progress is slower and the ultimate results are less than might have been, because a natural stage has been omitted and the mind claims its right to experience before it can intelligently express itself.

THE "INFANT-SCHOOL" MOVEMENT

The infant-school movement, now happily extending in this country, is a perfectly natural recognition of inevitable intellectual and physical law. The training possible in these schools, following upon that of an intelligent home, such as that previously referred to, is ideal for the development of speech and speech reading, and through these for the expansion of intelligence generally. Even if nothing be done in this way before school life, the infant school is more than justified, because it saves two vital years of life from worse than wastage. The value of this to the child cannot be calculated.

The primary purpose of the infant school should be to *use* speech rather than to teach it. The first definite aim should be to lead the young children to recognize that the seen movements of the organs of speech bear meaning and to discover that meaning. For this purpose there should be available a plentiful supply of the things that interest childhood, in order to stimulate the simple inquiry and the desire to know. These faculties lie at the roots of intelligent speech and language. Like the mother, the teacher of the young deaf child should concede nothing in the way of dangerous exaggeration in the movements of speech when addressing the child. The utterance should be crisp, clear cut, and rather slower than that ordinarily used. Speed may be ultimately

accelerated; but exaggeration is most difficult, if not impossible, to eradicate when once set up.

SPONTANEOUS VOCAL EXPRESSION

The almost certain result of such suitable oral treatment during these years, and varying in individual children, will be the attempt sooner or later to use for themselves parts of the speech they have frequently and intelligently observed, to express their own simple thoughts. The imitative faculty, through which the child must necessarily acquire language, no matter how developed, must at some time or other, and often very early, find its outlet in attempted speech. These spontaneous imitations, even if approximate and imperfect, possess the physical and psychic elements of intelligent vocal expression and should be encouraged, unless there be some grave and outstanding error in production likely to give serious trouble afterward. Even then care should be taken not to discourage the mind struggling to express itself.

It is interesting and profitable to note, as pointed out by O'Shea, that the hearing child's first imitations of speech, like those of deaf children, are primarily concerned with the motor processes, of the lips principally, required to make words or to perform actions with reference to objects. He is more "eye-minded" than "ear-minded" at first, though ultimately the latter attitude becomes supreme.

The motor processes, easily visible at the lips and the front part of the mouth generally, clearly indicate the two fundamental principles of the emission of breath or voice, explosive and continuous, in the consonantal sounds; and in a general way by the shape of the lips and the degree of the mouth opening, with what can be seen inside, they illustrate the mouth conformation of the vowel sounds. As all the consonantal sounds conform to one or the other of these two methods of emission, and as in the vowels, other than the basic and labials, lingual elevation follows fairly closely the alterations in the appearance of the lips and the successive narrowings of the mouth openings in speech, it would appear that these visible frontal manifestations of essential motor processes, accustoming the deaf child to their exercise in the simplest relation, should, if intelligently guided and associated, assist in the conduct of corresponding processes in other parts of the speaking mouth. In the range of non-vocal consonants and their voiced equivalents (*p, t, ch, k* and *b, d, j, g*) there is the same principle of muscular action involved, and after the kinetic element has been observed and exercised in its simplest relation this should imitatively and intelligently assist in the acquirement of the remaining sounds of the series. Similarly, with the continuous consonants of breath and voice, as well as the different groups of related vowel sounds, the distinctive kinetic element concerned, following certain generally similar movements and varying only in the locality of their formation, should, to a far greater extent than is at present realized in general practice, make possible the more natural acquisition of speech.

It is, as Ferreri has observed in one of his many writings, "one thing to teach and produce the separate sounds of a word and quite another to produce the word. In the first case, the work is analytical; in the second, synthetic, and in the articulated synthesis the reciprocal influence of associated sounds does not correspond to those principles and promises for the production of isolated sounds." The truth of this observation is daily made manifest, though not always recognized in the experience of every teacher. Analytically, the separate sounds of speech may be perfectly produced, but the attempt to combine them into words disturbs the expected finish and perfection of connected speech.

THEORY OF SPEECH *vs.* PRACTICE

Theoretically, there is a standard organic position for each of the sounds of English, but in the practical development of speech the theory is found to be very faulty. The modifications, or the reciprocal influence of the organic action for

one sound upon that of another blending in natural or connected speech, altogether upset it. Speaking critically, only the consonantal sounds formed at the lips or the very front of the mouth and perhaps the basic and labial vowels can be said to possess anything like a standard organic position. The consonantal sounds formed inside the mouth vary materially from any particular standard of position that may be separately taught through the influences of the vowel company they keep. For instance, the back consonantal sound of *k* in the word "kit," because of the organic anticipation of the close vowel short *i*, is formed in a much closer position of the mouth than in the same sound in the word "cart," and therefore the essential lingual action takes place more forward in the mouth. It is evident that to attempt the utterance of the word "kit" with the initial sound formed in the open position for the same sound in the word "cart" must, more or less, destroy the purity of the vowel, as well as militate against the easy combination and therefore against the facility of speech.

A survey of the unaccented vowels leads to a similar conclusion. The second vowel in the word "fatal" is either unaccented or not sounded at all, the anticipated vocal element of the sound *l* being sufficient to mark it. The sound of *er* in the word "butter" is also unaccented or partakes of a nondescript quality. If a standard position or movement, as developed by analytic teaching, be given to these unaccented vowels, accent disappears and with it the freedom and intelligibility of speech, and at the same time stress and emphasis in sentences vanish.

It may be said that under an analytic method of developing the separate sounds of speech the combination into words is afterward effected by the direct imitation of such words. It is true that the necessary articulated synthesis can only be effectually brought about by direct imitation; but it is certain that analytic treatment in the first case does not promote the ease of blending sounds into words and words into sentences in the reciprocal manner that natural speech demands. The synthetic method of developing speech is undoubtedly more natural, more intelligent to the child at the time, and likely to become far more serviceable to him than its analytic cultivation, which finds no parallel of any sort in hearing children, can be.

A leading value of such a procedure of developing speech in deaf children would be the establishment of unity between the fundamentals of speech and speech reading. This unity exists between the speech and the speech-hearing of the five-sensed child. Generally speaking, this essential unity has not yet existed for the deaf child. The separate sounds have been taught, and necessarily this separate utterance of the elements of speech has been dominant, at least for a considerable time, in the child's mind; and yet speech reading to be in any high degree successful must be synthetically grasped. The reader of speech who strives to single out the individual sounds he sees, and to piece them together in known words, can never attain excellence in the art. Under purely analytic methods this is all that the learner can be expected to do, although some by the brightness of their intelligence do more. The efficient reader of speech must, from what he sees of the connected facial movements and the manner of the speaker, weave the fleeting indications he observes into a sort of a cinematograph, which conveys meaning to his mind. His prospects of doing this are vastly enhanced when the conscious movements of his own speech embody all those finer reciprocal relations and movements of one sound upon another that not only mark the speech of those who address him, but further constitute its beauty in accent, emphasis, and rhythm. However it may be developed in the first case, to be of any real practical utility in life, speech reading depends upon synthesis; and the conflict that ensues between speech developed upon the idea that the element is its unit and speech reading which cannot go lower than the syllable jeopardizes the result in either branch of oral work and disturbs what should be a reciprocal and harmonious whole.

THE VALUE OF SCIENTIFIC SPEECH KNOWLEDGE

The hearing child, whose speech and speech-hearing are naturally developed in this reciprocal manner, is usually found to require the correction of wrongly produced sounds. Under the conditions of deafness this subsequent and continuous corrective training must be far more necessary. It will be imperative throughout instruction to correct individual elements that present difficulty to the child. This is where the analytic knowledge of the teacher should step in; but in every effort dealing with a particular sound it is preferable that the exercises given should be of the sound in a series of natural settings in words rather than a mere practice of a separate utterance.

It is necessary that the teacher's knowledge of speech and of its appeal to the eye and the muscular sense of the deaf should be extensive and exact. He should know not only the general organic positions of the various sounds of English, but also the delicate modifications of these in connected speech; and, further, the outward visible indications of inward and often invisible processes have to be appreciated. This very complete knowledge of the science and art of speech will always be required from the teacher in "following up" and correcting, where necessary, the speech of deaf children. This appears to be the leading value and use of an analytic knowledge of the sounds of speech.

HARMFUL ARTIFICIAL ASSISTANCE

The voices of deaf children often betray them. This would not be nearly so much marked if natural procedures of developing voice were adopted. Voice exercises to a deaf child to whom quantity is quality tend to grave errors in voice production. More natural exercises on the lines referred to in this paper would prevent many of these impurities in the voices of deaf children. The application of the hand to the throat, by inducing super-consciousness in an organ that should work unconsciously, accounts for many voice troubles. The artificial manipulation of the tongue, the handling of the lips, and unnecessary and unnatural procedures work much harm in the speech of the deaf. These are all very dangerous expedients. The teacher's mouth as the model and the mirror as the reflection of the child's furnish all that are generally required in the way of suggesting speech to the child. The less artificial assistance given the better.

The need of today is to intellectualize speech and speech reading, which means that they must be brought more and more into harmony with the speech and speech-hearing of the hearing child, both in their physical and intellectual relations. The child who hears and speaks is therefore the one set in the midst of teachers of the deaf, and the nearer deaf children approximate to him in every way the better. Nor is the ideal too high. There is a general similarity of mental and physical possibility between the two, and only one thing varies—that is, the one thing needful to speech production and recognition; but all is not gone. That one deficiency is the opportunity of the specialist teacher of deaf children, who, being a specialist, should first of all know the normal production of heard speech and then be able to make those essential changes which the creation of a knowledge of speech, seen and felt, in the deaf demand.

"USE" RATHER THAN "TEACH"

As teachers of speech to the deaf, we have made too much of the phonetic difficulty, which, as Ferreri says, "does not appear to be so serious when we make use of the instinctive element, and also of the precocious observation of the movements of the mouth on the part of the dumb child, as when we try instead to generalize the oral instruction." We have not given sufficient regard to the powers and instincts of the child. We have *taught* speech too much, and necessarily therefore have used it too little. Only the most easy going among us are content with the present methods and re-

sults of oral teaching. There is generally a fine discontent with them. The attempt, now widely spreading, to "catch the child young" is doing more than anything else to throw the light of truth upon those educational pathways that shall lead the deaf child to intellectual competence, and through it to normality of thought and expression as closely as he may attain to it. And in developing speech and speech reading, which we seek to make the handservants of his intellectual life, it is wise and proper that the little child should lead us.

ANOTHER OF THE ASSETS OF DEAFNESS?

Pictures—and a Lip-Reading Moral

BY GRACE K. WADLEIGH

IN READING Mr. Nitchie's admirable article on the peculiar advantages of us non-hearing folk*—a delayed reading because of a summer abroad—at a time when my mind was full of remembrances of many wonderful galleries, it seemed to me that the love and appreciation of pictures, with its allied art, might almost be considered another of the "Assets of Deafness."

It must be admitted that many hearing persons are not lacking in this appreciation. If I am somewhat too arrogant in my claims, I trust some of the feelings of the *nouveau-riche* may be pardoned me. Still it did seem that I—and largely by reason of my deafness—was more than ordinarily sensitive to the language of expression, gesture, color, harmony, and form; at least there is nothing unreasonable about such a claim. Though the deafness in itself is no asset, the eyesight and mind are, or should be, the quicker and more accurate because of the fuller development that has been forced upon them. Moreover, our deprivation in many of the pleasures of life gives an added zest and an exquisite poignancy to those which are still wholly ours. And in the world of art, so like the other world, where continually we find speech without voice, we have less adjustment to make; we are on more familiar ground than our hearing companions. The appreciation of art is no sudden acquirement. All our past life determines it, and it seems to me that the life of the deaf person is likely to be the better preparation.

THE PRIVILEGE OF ENJOYMENT

At any rate, my own enjoyment has been so great that I feel like urging all those with impaired hearing, if urging be necessary, to enjoy also. I am not advocating any mental discipline. It is not our anxious duty to understand art; it is our high privilege to enjoy it. We must realize it is for us. Then we may begin—if any of us really are beginners—in various ways. The Golden Rule, very possibly, is that there is no Golden Rule. We may find something that is considered good and look at it, or we may find something that we like and look at it as long as we can. We may read about different artists and their times. We may place ourselves under the direction of a guide with a contagious enthusiasm, or we may conscientiously match pictures with their catalogue titles in a "something attempted, something done" spirit, if it pleases us. If we give "Art" just a bit of a chance at us, she will be likely to insinuate herself into our affections somehow or other.

Infallible judgments are not to be expected of us. We need not worry if we do misjudge genius now and then; that is, apparently, one of the things it was made for. We shall not, however, probably go much farther astray than Inness did when he called Turner's *Slave Ship* "the most infernal piece of clap-trap ever

* *Some Assets of Deafness*, E. B. Nitchie, THE VOLTA REVIEW, July, 1913.

painted," or than Ruskin when he called Whistler's *Nocturne* "a pot of paint flung in the face of the public." Both remarks, nevertheless, showed a proper interest in painting, and neither Turner nor Whistler was in the least harmed thereby.

It has been somewhat disconcerting to find so many people who seem to like just the proper things, but I fear these people are almost too good to be true. Anyhow, there were plenty of failings in my case. Very frequently, alas! I failed to rise to the occasion. I patronized genius insufferably, and went about like the girl who was taken as a great treat to see one of the most wonderful views in Switzerland, and who remarked indifferently, "Why, this is quite nice, isn't it?" Giotto's *Tower* was at first sight a great disappointment, and the only emotion that Raphael's *Madonna Granduca* aroused in me was a desire to throw something at her. But I was reverent enough before Botticelli's *Venus* and Fra Angelico's *Coronation,* masterpieces evidently painted in some other world and brought over to this—God knows how. Certainly miracles do happen! I caused several of the judicious to grieve, or rather to look disgusted, by trying to see everything in the Louvre all at once. I do not recommend any such action, though perhaps in a lip-reader it was not altogether blameworthy. Anyhow, it was a most magnificent sensation.

We must not, of course, be too presumptuous in following our likings, and we must listen patiently to the artist's message. We must not be too scornful of authority, or despise the useful guide-books which the exigencies of hurried sight-seeing often render quite invaluable. Nevertheless, the guide-books are made for us and not we for the guide-books.

OUT OF THE SLOUGH OF DESPOND

Wherefore I am reminded of my experience in the Arena Chapel in Padua. Three sleepless, mosquito-full nights had left me in so exhausted a state that I felt no interest in the chapel. I didn't care whether it was on an arena or in a turnip patch. I knew it contained frescoes by Giotto and I was very skeptical about caring for Giotto. I got inside somehow; an attendant gave me two or three guides, with numbers corresponding to the pictures, and a friend thrust a Baedeker into my hand. I dropped into a seat and tried to make the connections; but I was tired and stupid and it seemed to be all in vain.

I was perhaps the most helpless and abject person in the world just then. After a few minutes, however, my common sense rose in rebellion and made very uncomplimentary remarks to me. "What an everlasting idiot you are!" it began. "Giotto is supposed at least to be a great artist. For Heaven's sake give him a chance to prove it."

So I cast away all my aids to seeing and saw. I was for a time a disembodied spirit. When I came back to earth, I hunted up a little about Anna and Joachim, but it was not really important.

GIOTTO AS A LIP-READING TEACHER

I hardly know how to tell my impressions of Giotto—that simple, direct, and dignified, emphatic, dramatic, and ecstatic man, with such a wonderful genius for going straight to the point without any superfluity of detail. He would have made a first-class teacher of lip-reading. I will give him that high recommendation, among others, and I am meditating hanging some of his pictures about my class-room by way of example.

Being a teacher myself, I suppose I may point a moral to adorn and finish this tale; for lip-reading, too, as we know, is an art, and the arts are all kindred. In lip-reading, likewise, it is our high privilege to enjoy, and not for one moment is it our anxious duty to understand. Yes, I know we wish very much to understand, but the understanding must after all come somewhat incidentally, a kind of by-product of our state of mind. And it is well to remember now and then that if we are too anxious we simply cannot understand.

AN OUTLINE IN ARITHMETIC AND METHODS OF PRESENTING THE SUBJECT

BY BARTON SENSENIG

This is an outline of a year's work for beginners in arithmetic and is not to be confounded with the first year in school in an institution for the deaf. Pupils vary so in age, ability, and previous training, that the subject of time must be left to the discretion of the teacher.

THE FIRST YEAR'S WORK

THE teacher of arithmetic to beginners proposes to do work which is just as difficult for her pupils as advanced work is for pupils in the advanced department. She proposes to acquaint her little boys and girls with one of the greatest triumphs of inventive genius—the ten numerical symbols used in arithmetic and the device of place value.

The Brahmins were the inventors of ten symbols, very much like those in present use, and the system of denary arithmetic. They modestly ascribed their discovery to the beneficence of the Creator. Be that as it may, let us remember that the symbols we use so freely were unknown to the Greeks and the Romans in the periods of their highest development, and were probably thought out by some obscure man living close to the heart of Divinity somewhere in the region of the Ganges.

It has been argued that a duodecimal system of grouping in some ways would have been an advantage, but ten is an ideal group and will probably never be displaced as a unit for grouping. I think that the boys and girls of the year 5,000 A. D. will use the same system and the same symbols as we are using now. Both system and symbols have been reduced to a refinement of perfection which cannot be excelled.

VISUALIZING THE SYMBOLS

How the ten symbols assumed their present shape has been the subject of conjecture. In order to give the symbols a meaning to the beginning pupils, I would arrange sticks of convenient length, as shown in figure 1.

I would stitch or glue the sticks as arranged in the above symbols on cardboard of different color from that of the sticks, and below each set of sticks I would write the symbol and its name. The card containing the five-symbol would appear as in figure 2. The card with the cipher-symbol would have no sticks. The card containing the ten-symbol would have a bundle of ten sticks fastened on it. I would hang up the cards in order where the children can easily see them. The number of things for which a symbol stands is shown in the stick-symbol, and the teacher should show the pupils that the figures made by the sticks assume the same shape as the symbols the pupils are to use by simply rounding the corners.

This stick arrangement literally makes children see the number of things for which a symbol stands. It also shows groups. See the five and four in the nine, the four and four in eight, the four and three in seven, the three and three in six, the three and two in five, the two and two in four. In giving little addition problems, the teacher can take advantage of these figures. Instead of remembering that $4+3=7$, the child has had that fact impressed on his mind by observation. The teacher can constantly allude to the stick-figures. I have never seen a more powerful appeal made to the understanding of beginning pupils than is here made in the sphere of abstract numbers within the limit of ten.

Let the children build up these figures on the table with sticks without referring to the original cards. This exercise should be continued until each child builds up, without hesitation, any number ex-

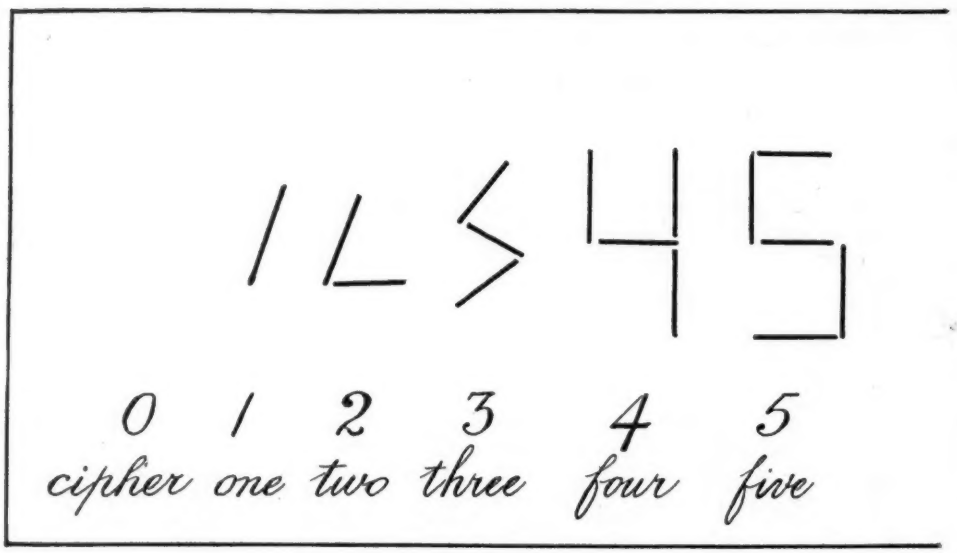


FIG. I

pressed by the several symbols. Since arithmetic is not a game of sticks only, use other objects in building up the figures. Use seven chairs in building up a seven. Use five boys to build up the figure five; they will enjoy the game immensely. Remember that the highest art is the greatest simplicity combined with interest. Ask four girls and five boys to build up the figure nine by standing, the four girls making the stem and the five boys the loop of the figure. Make a group of ten pupils stand close together and tie them together with a rope; that will be the bundle of ten.

The pupils must also be taught to make the ten symbols correctly. Make a correct perforated outline of each symbol on cardboards and have the pupils stitch in this outline with bright yarn, beginning where they ought to begin to make a symbol. This will call close attention to the shape of the symbols. These symbols are easily made and are beautiful. If you think that you can make an improvement, try for a week to make a new symbol. If we used the duodecimal system, we would need two more symbols to express ten and eleven. The bundle of twelve would be represented by the present ten-symbol. Try to think out a new symbol that would not bear any close resemblance to those we already have and which would be as beautiful and as easily made. Nothing makes arithmetical work so displeasing as to have the beautiful symbols, which are types of symmetry, set down in a slovenly way. The teacher should insist on well-made symbols, so that there will be no confusion between fives and threes and sevens and nines.

ADDITION EXERCISES

The exercises given at this stage would include the following: Show the pupils a number of things and have them point out the symbol or tell you the name of the symbol representing the number. Conversely, point to a symbol, or speak the name of a symbol, and have them show you a number of things corresponding to it. Show large dominoes made of cardboard, having all the combinations within the ten limit, and have the pupils tell you the names of the symbols for the various combinations; and, lastly, put all the possible combinations in addition on a chart, and, passing rapidly from one problem to another, have the pupils name the sums. Addition problems of two figures, making sums within the ten limit, may also be put on separate cards. These

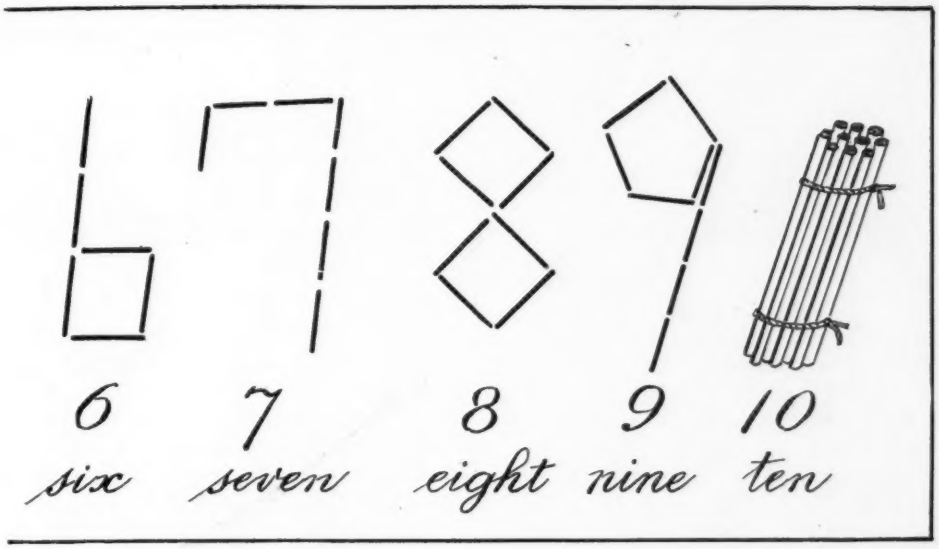


FIG. 1

cards would be used in competitive tests. The pupil who answers first would get the card in each case, and the boy or girl holding the greatest number of cards when the contest closes would be the winner. Eliminate the persistent winner and put his name on the roll of honor and carry on the game with the remaining pupils until all are on the honor roll, if that be possible.

We stated above that all the combinations within the ten limit should be put on a chart for rapid drill-work. Within the ten limit we have these combinations:

1	1	1	1	1	1	1	1
+1	+2	+3	+4	+5	+6	+7	+8
1	2	2	2	2	2	2	2
+9	+2	+3	+4	+5	+6	+7	+8
3	3	3	3	3	4	4	4
+3	+4	+5	+6	+7	+4	+5	+6
5							
+5							

When a cipher is involved, there is no addition. Three plus five is the same as five plus three; so, the above 25 cases represent all the possible combinations of two figures taken at a time, which is the way we add. The pupils should be taught to count forward by ones and by twos. That will enable them to answer immediately all of the questions involving a one or a two, leaving only nine of the above problems to be added. But already the children have seen that the six is made of three and three, the seven of four and three, the eight of four and four, the nine of four and five, and two nickels make a dime, or two fives make ten. That leaves only three cases: $3+6$, $3+7$, and $4+6$, two of which make ten; and $3+6$ is the same as 3 threes, which will come up in the special cases of addition, known as multiplication. So, in this addition work the law of association has played a larger part than pure memory.

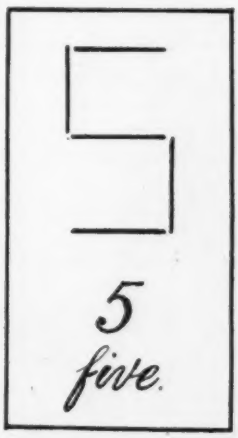


FIG. 2

MULTIPLICATION

Multiplication is a special form of addition, which should also be taught within the ten limit. An addition question of 10 ones has 10 for its sum, 9 ones make 9, 8 ones make 8, and thus we may write the one-table. In the same manner, the two-table may be developed to five twos, the three-table to 3 threes, the four-table to two fours, and the five-table to two fives. To make the tables real and interesting, I would have the pupils march in groups, in each case putting the question on the board. For ten pupils marching in single file, I would make an addition question of ten ones; marching by twos, we would get the addition of five twos. I would resolve the five twos into two fives. I would resolve three twos into two threes. This is an exceedingly important point, for if the children understand this relationship, the difficulty usually offered by the multiplication tables is diminished by half. When the children have mastered the eight-table to eight nines, they have also mastered the nine-table to nine eights. Make an addition problem of five twos and one of two fives, one of three twos and one of two threes, one of two fours and one of four twos, and one of ten ones. Tabulate these results as follows:

10× 1 } are 1×10 } the same.	5×2 } are 2×5 } the same.
4×2 } are 2×4 } the same.	3×2 } are 2×3 } the same.

We have spoken of the multiplication tables. These should not be committed in order, and in reading expressions like $2 \times 3 = 6$, the children should be taught to say two threes are six, instead of two times three equals six. The last expression does not state the thought as plainly as the first.

SUBTRACTION

Pupils should be taught to count backward as well as forward, by ones; then by twos. Subtraction is somewhat harder than addition, and involves 54 cases within the ten limit, as follows:

10	10	10	10	10	10	10	10
−1	−2	−3	−4	−5	−6	−7	−8
10	9	9	9	9	9	9	9
−9	−1	−2	−3	−4	−5	−6	−7
9	9	8	8	8	8	8	8
−8	−9	−1	−2	−3	−4	−5	−6
8	8	7	7	7	7	7	7
−7	−8	−1	−2	−3	−4	−5	−6
7	6	6	6	6	6	6	5
−7	−1	−2	−3	−4	−5	−6	−1
5	5	5	5	4	4	4	4
−2	−3	−4	−5	−1	−2	−3	−4
3	3	3	2	2	1		
−1	−2	−3	−1	−2	−1		

The pupil who can count backward by ones already knows ten of these answers, and if he can count backward by twos, he has mastered nine more problems. He knows that if an equal number is taken from a number, there is nothing left. There are nine such cases, as: $9-9$, $8-8$, $7-7$, $6-6$, $5-5$, $4-4$, $3-3$, $2-2$, and $1-1$. When one less than a number is taken from a number, there is one left. There are nine such cases, as: $10-9$, $9-8$, $8-7$, $7-6$, $6-5$, $5-4$, $4-3$, $3-2$, $2-1$. The child recognizes that the difference is one, because one added to the smaller number gives the larger. A difference of two is also readily recognized. There are eight such cases, as: $10-8$, $9-7$, $8-6$, etc. That leaves the following problems, in which the differences run from three to seven:

10	10	10	10	10	9	9	9
−3	−4	−5	−6	−7	−6	−5	−4
9	8	8	8	7	7	6	
−3	−3	−4	−5	−3	−4	−3	

Of these problems, $10-5$, $8-4$, and $6-3$ present no difficulty, as the pupils

already know that two fives are ten, two fours are eight, and two threes are six. That leaves twelve cases on which to drill, and many problems should be submitted containing these twelve combinations. Time will be gained by calling the attention of the pupils to the similar groups alluded to above in this way:

10 — 1 =	10 — 2 =	9 — 9 =	10 — 9 =
9 — 1 =	9 — 2 =	8 — 8 =	9 — 8 =
8 — 1 =	8 — 2 =	7 — 7 =	8 — 7 =
7 — 1 =	7 — 2 =	6 — 6 =	7 — 6 =
6 — 1 =	6 — 2 =	5 — 5 =	6 — 5 =
5 — 1 =	5 — 2 =	4 — 4 =	5 — 4 =
4 — 1 =	4 — 2 =	3 — 3 =	4 — 3 =
3 — 1 =	3 — 2 =	2 — 2 =	3 — 2 =
2 — 1 =	2 — 2 =	1 — 1 =	2 — 1 =
1 — 1 =			

10 — 8 =
9 — 7 =
8 — 6 =
7 — 5 =
6 — 4 =
5 — 3 =
4 — 2 =
3 — 1 =

Lay down four blocks and take away three; then point to the problem 4 — 3. Have the children illustrate each of the above problems in the same way. After the concrete illustrations, run over the above problems rapidly, requiring the pupils to name the results. Do not follow the problems in the order given. For the minus sign, use *less,* and read the equal sign *are.* Thus 8 — 2 = 6 is, at first, read "eight less two are six"; later, the other form may also be used.

DIVISION

Division is the converse of multiplication. When we say five twos are ten, we answer the question, "How many twos in ten?" The same groups appear as in multiplication, and the division idea may be developed in conjunction with work in multiplication. Questions like the following might be asked: (*a*) How many 2-cent oranges can I buy for 10 cents? (*b*) for 8 cents? (*c*) for 6 cents? (*d*) At five cents each, how many tops can I buy for 10 cents? (*e*) John had eight apples; to how many boys can he give two each?

The division sign should also be introduced, as follows:

8 ÷ 4 =	10 ÷ 2 =
9 ÷ 3 =	10 ÷ 5 =
6 ÷ 3 =	8 ÷ 2 =

COUNTING BEYOND TEN

The idea of number is innate. The lower animals possess it. The children must learn to count and to know the place value of figures. The teacher should not hesitate to go beyond ten in counting, though fundamental operations are to be conducted within the ten limit the first year. The children are eager to count, and I would lead them to count to a hundred before the end of the year. They want to know what the number following ten is. A bundle of ten and one is eleven. Make two columns, one for tens and the other for ones. Show that ten means a bundle and no extra sticks. Eleven means one bundle and one stick; twelve means a bundle and two sticks. Now show the pupils a bundle and three sticks and ask for a volunteer to write the number corresponding to the number of things you show. The number will be correctly written. The children all begin to see how it goes and the teacher will not be obliged to write any numbers between twelve and ninety-nine. Then take ten bundles of ten each and tie them together to form a hundred-bundle. Make a third column and write one in it, with ciphers in the other columns. Just to see what the pupils will do, show two hundred-bundles, three ten-bundles, and four ones, and ask for a volunteer to write the corresponding number. I think it will be correctly written.

The pupils must also be taught to *read* the numbers above ten. A three and a ten is not called threeten, but thirteen. Ten is written *teen.* The pupils' attention should be called to that, as it will help to explain the meaning of the names of the numbers from thirteen to nineteen. The two tens we read twenty, the three tens thirty, and the four tens forty. By simply reading these numbers, the pupils learn the ten-table. Forty-five is four

tens and five; eighty-four is eight tens and four. If the teacher starts the ten-table, the pupils will finish it, as the results are obtained by adding a nought to the figure multiplied.

After pupils know the names of the numbers up to a hundred, they should be led to count to a hundred by ones, tens, fives, and twos, and also to count backward. They should be taught to count, starting from any point designated by the teacher. The teacher should ask the pupils to fill out the following suggestions:

(1) 37, 38, 39.....
(2) 49, 48, 47.....
(3) 28, 30, 32.....
(4) 36, 34.....
(5) 70, 80.....
(6) 60, 50.....
(7) 75, 80, 85.....
(8) 65, 60, 55.....
(9) 38, 48, 58.....
(10) 64, 54, 44.....
(11) 2, 4, 6, 8.....
(12) 1, 3, 5, 7.....

Note the fact that practically no memory work is involved in any of the work which has been suggested for this grade. The pupils, by suggestion, are led on step by step and naturally come to understand what they were to learn.

THE YEAR'S RESULTS

To sum up, the pupils by the end of the year are supposed to be able to count to a hundred and to count back by ones, twos, tens, and fives, starting from any point suggested by the teacher; to show bundles of sticks and loose sticks to represent any number less than a hundred that the teacher may select, and, conversely, to name the number corresponding to the number of sticks the teacher may show; to compute, with ten as a limit, in addition, subtraction, multiplication, and division, importance being given to the subjects in the order named. Grube insisted that all processes be taught simultaneously, but that is not good logic, as they are not all equally difficult or equally important. Addition is the most important process and the easiest one, and should have first place in teaching young children the fundamental operations.

The meaning and the names of the signs $+$, $-$, $\times$, and $\div$ are taught, as well as the meaning of the cent, nickel, and dime. It is assumed that concrete work has kept step with abstract work throughout the year. In making up problems for the children, the teacher will select matter which lies within their experience, making use of objects, games, plays, pictures, and stories.

Though the method of presenting primary arithmetic is empirical, we are aware of the fact that the mere presence of objects does not always produce the desired effect. The teacher who can give the proper setting to the material, so as to start mental activity along right lines, will be the most successful. Such a teacher will present primary arithmetic in such a way that the children will not learn by rote. Probably the greatest error is made in putting objects aside too soon for those who are slow in grasping ideas. The bright pupils of a class impel a teacher too rapidly. The duller pupils will profit more by doing again the original object-work than by a repetition of sentences and phrases which are not well understood. It has been my experience that pupils sometimes get hold of ideas more rapidly through drawing than by the use of objects. In either case, the teacher throws out suggestions to stir up thought activity along desired channels.

In the next issue Mr. Sensenig will continue his "Outline of Arithmetic," presenting the second year's work.

PRINCIPLES OF SPEECH AND DICTIONARY OF SOUNDS

BY ALEXANDER MELVILLE BELL

A new publication of this "A B C of the science of speech," with revisions made under the personal supervision of Dr. Alexander Graham Bell, will begin in the February issue of this magazine. New subscriptions should be ordered immediately, in order to secure every instalment of this invaluable work.

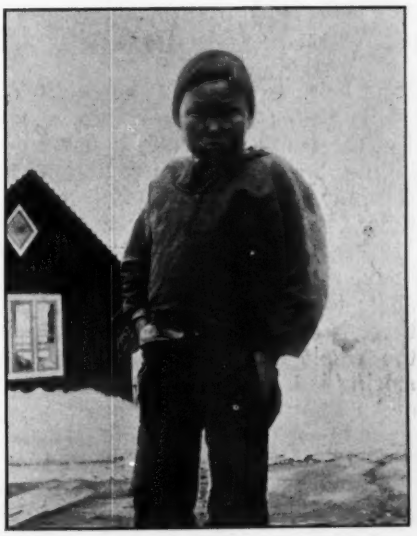
THE NORTHERNMOST SCHOOL FOR THE DEAF IN THE WORLD

BY ANDERS HANSEN

THE northernmost school for the deaf in the world came into existence on the first of last May, when work in educating the deaf was begun at the small trading station of Frederickshofe, in the icy wilderness of Greenland. This pioneer educational effort in behalf of the Eskimo deaf has been inaugurated under the auspices of the Danish Mission to the Deaf in Greenland, of which Mr. Jorgensen, clergyman of the deaf congregation in Copenhagen, is chairman.

A number of clergymen have been appointed by the Danish government to charges in the various trading stations of Greenland. One of these pastors, Mr. Wassman, has studied the methods of educating the deaf at the Copenhagen school, and has now undertaken the work in the far-away colony.

It is thought impossible, at least for many years to come, to introduce oral teaching for these children of the Arctic. The immense distances, the short stay at school which most of the children are allowed, and the linguistic difficulties seem to preclude any hope of the successful use of this method, so that manual instruction alone will be employed. Rudimentary training in some trade will be given the children as far as possible.



NATHANAEL KNUDSEN, FIRST PUPIL OF THE GREENLAND SCHOOL

A comparison of the two pictures will show the immediate results of soap, water, and civilization

The first pupil, Nathanael Knudsen, the son of a seal hunter from the extreme North, is now 14 years old. It is unlikely that he will be permitted to attend school more than a couple of years, for the children of Greenland are under the necessity of helping in the support of the family at an early age.

The school provides board and lodging for the pupils in private families. In Nathanael's case he is lodged with the most cleanly person of the neighbor-

hood, who happens to be the midwife of the section. The two pictures shown herewith will give some impression of the change wrought in this youth by his contact with civilization, and especially with soap and water, scissors and comb.

Nathanael is "kayak-giddy"—that is, he is hopelessly overcome with vertigo when in the skin boats used by the natives. Hence it has been determined to fit him for hunting the big land game which abounds in the country, and he has been given a modern rifle for his own use. We venture to say that a new branch of "industrial training" is here added to the school curriculums.

The boy has shown himself bright and eager to learn. That his religious ideas are being developed is shown by the readiness with which he now signs God as the "Father in Heaven" and Jesus as "He with holes in His hands."

THE ECONOMIC SIGNIFICANCE OF DEAFNESS*

BY JOHN DUTTON WRIGHT

WHEN I looked at your program I was amused at the irony of fate in the title given me. I have been working for 25 years to make the term "mute" a misnomer as connected with the deaf, and yet an educated and cultured physician puts me down as the superintendent of a school for "deaf-mutes," though he is supposed to know that during the 20 years my school has been in existence no form of communication between pupils and teachers has ever been used except speech. I regret to say that some schools for the deaf in the United States are still sending out into life those to whom the term "deaf-mute" may properly be applied, but so far as those who have enjoyed the advantages of my school, as of many others, are concerned, it most certainly is a misnomer. My object in accepting your courteous invitation to address you this evening is to urge you to use your influence to take a larger proportion of the deaf out of the class of "mutes."

Society is an organism, or at least it should be, and the more closely it conforms to the laws of a physical organism the more smoothly and satisfactorily do human affairs move. An organism is a structure in which each component part is at the same time a means and an end. My body is a typical organism. My hand helps to maintain the health of the whole body; it is, therefore, a means. But the whole body also assists in keeping my hand in proper condition; therefore, my hand is also an object of solicitude. It is an end as well as a means. If there is something wrong with my body, the hand sets to work to do its share toward remedying the trouble. If there is something wrong with my hand, the whole body contributes toward restoring it to health.

An appendage, in the sense in which I would use the term tonight, is some part of the organism that has ceased to be a means and is only an end, only an object of solicitude to the rest of the organism, contributing nothing to the common welfare. The tendency of those members of society whose bodies are not perfect is to become a social appendage—an object of care, but not a means of helpfulness. The blind and the deaf are likely to become social appendages unless special care is taken to enable them to perform some useful function.

In the long past ages, when survival meant warfare, society was compelled to unburden itself of all such appendages, and the imperfect offspring were eliminated at once. Conditions have vastly changed now. Human industry has accumulated from the bosom of mother earth a store of material in excess of actual need for the maintenance of life. It is no longer a hand-to-mouth struggle,

*Read before the New York Physicians' Association, December 17, 1913.

and we can, and should, and do devote some of our surplus wealth and time to enabling the imperfect members of the social organism to rise from the status of a burdensome appendage to that of an organic and useful part of the social body.

Chance cast my lot many years ago among those who are doing what they can to enable the deaf to perform some useful function for society in return for the many benefits that organized society confers upon them.

THE MEANS OF COMMUNICATION

The calamity of deafness is a great one in every case, but is by far the greatest when it comes to a child. A very slight impairment of hearing in a child of two years is a far greater handicap than total deafness coming upon an adult. In order that the growing member of society may receive the accumulated knowledge of the race, there must be a means of easy and universal communication. The greatness of the calamity of deafness comes from the fact that it cuts off this essential communication by which mental stimulus is given and knowledge is conveyed.

Our first task, therefore, with the deaf child is to restore him to communication with the other members of society. Society is organized on a basis of spoken communication. It is speech that vitalizes and articulates society; but speech has grown up around the ear and is based upon hearing. With hearing destroyed, how can the child comprehend speech? He has still the senses of smell, of touch, of sight, but he cannot smell speech, and there are very narrow limits to his ability to feel speech. My friend and former pupil, Helen Keller, can read my lips by the hour with considerable ease by the sense of touch, but you can readily see physical limitations to this method of comprehending speech.

Can the deaf child *see* speech? Strangely enough, it has been found that he can. But I need scarcely call your attention to the different methods of operation of the eye and ear. Each has its limitations, each excels the other in certain respects. Had the human race been created with eyes, but without ears, organized society would have developed a means of daily communication based upon the eye, in which all symbols would have been clearly distinguishable and legible, with no possible confusion. But as the human race possesses hearing, and hearing sends out its perceptive lines along the millions of radii of the sphere of which the ear is the center, without the necessity of conscious directive force, the race has found it easier to base its communication upon audible sounds than upon visible movements, since the organ of sight operates only along a single line after a conscious directive effort.

We cannot alter this condition of affairs. All social intercourse will continue to be based principally upon the spoken word comprehended by the ear. If, then, we are to put our deaf people into ready communication with their fellows, we must enable them to comprehend the spoken word by means of some sense remaining to them. There are methods of communication more easily read by the eye than speech, such as gestural signs and finger-spelling, but these are not understood by many people, and without speech only laborious pencil and paper remain for general use.

AN ORAL ENVIRONMENT

There are about 13,000 pupils in the United States schools for the deaf, and about 35,000 in the country who are no longer in school. Of those now in school, or who have left within 10 years, about 75 per cent have been given some instruction in speech, but only about 25 per cent have been taught to make speech their working means of communication and not merely an unused and unimportant accomplishment. As I have said, there are methods of communication more readily visible to the eye than speech. If the child is given gestural signs and finger-spelling, he will naturally follow the line of least resistance, and that is the reason why the oral work of the so-called "combined" schools does not noticeably affect the intercourse of the

deaf with the hearing world around them.

The greatest need of the deaf is the ability to communicate easily and rapidly with all those with whom their daily life brings them in contact. I urge you, therefore, to always exert your influence to surround the deaf during their school life with an oral environment. Let me emphasize that I do not mean merely to give them some instruction in speech and lip-reading, or even that all their class-room work should be done orally. I mean that during their entire *school* life they should make no use of, nor see others make use of, any manual means of communication. That is what I mean by an "oral environment."

VOCATIONAL TRAINING

Next to the ability to comprehend the speech of their associates and to speak intelligibly to them, the deaf need to be given some means of adequately supporting themselves. Much more is being done for them in this regard than is being done to give them the ordinary means of communication. In every school for the deaf some industrial and practical training is given, and in many schools regular trades are taught. If they were able to easily communicate with others, almost all fields of activity would be open to them. With the handicap of a restricted communication, the field of activity is somewhat reduced; but, in spite of this disadvantage, there is scarcely a form of human activity in which one or more deaf people will not be found engaged. The greater number, however, naturally drift into the mechanical trades, where, having once acquired the requisite manual dexterity, they find themselves least inconvenienced by the difficulties of communication.

Improved facilities for enabling the deaf to speak and to understand the speech of others and increased efficiency in the teaching of remunerative occupations will be the two greatest forces for making this class an integral part of organized society instead of a separate appendage.

THE HARD-OF-HEARING CHILD

There is another phase of the problem that requires the increased attention of the community. That is the existence of a considerable number of young people in our public schools whose hearing is slightly impaired, yet who are not sufficiently deaf to be in any sense proper candidates for a school for the deaf. Many a public-school pupil has been branded as stupid, backward, or lazy whose only fault was the lack of acute hearing.

In the conditions existing in the public schools of our cities, where classes number from 30 to 50 or even more, a slight impairment of hearing is a serious handicap to the pupil. More attention is being paid to those cases in our public schools now than was the case five years ago. Care must be taken to attach no stigma of stupidity or defectiveness to the special attention that is conferred upon these pupils. It is good policy for society to take early precautions that they should not, through neglect, become really backward and stupid, and eventually less effective members of the social organism than they might have been had the proper amount and kind of attention been paid to them during their early formative years.

PREVENTION MOST IMPORTANT

But, important as all these educational remedies are, they are wholly insignificant as compared with effective agencies for the *prevention* of deafness. To prevent the occurrence of the condition which requires these special expedients is immensely desirable. Dr. Kerr Love, of Glasgow, has emphatically pointed this out in a series of lectures delivered by him a year ago. I ask your indulgence if I quote briefly from his first lecture:

"Except from the point of view of the individual already affected, treatment and cure are of little importance. From every other point of view prevention is everything. Plague, cholera, hydrophobia, and relapsing fever have been swept out of our country because they were too terrible to tolerate and because we could not

cure them. With regard to nearly every infectious disease which has come thoroughly under human control, the two factors in the control are: (1) Knowledge of the specific cause of the disease; (2) Isolation of the infected individual. We do not know the specific causes of scarlet fever and measles, and we do not isolate all cases, so that both factors are absent in the cases of these diseases. From statistics which I collected from British schools in 1896, the conclusion was drawn that meningitis caused more deafness than either of these diseases, and that it was the most common cause of deaf-mutism in our country.

"Except in the literal sense of taking care of these deaf children, we cannot cure them. How much finer it would be to prevent such deafness. Where you prevent you do not need to educate. To send into the world a whole life instead of a maimed one, a helper instead of one who needs help, to save the lives of thousands of healthy children, not only from deafness, but from death, that is the problem, and these the inducements, held out to those who would prevent acquired deafness.

"To sum up, then, the steps to be taken at once for the prevention of acquired deafness are:

"1. The management of the ear complications of the infectious diseases by otologists.

"2. The notification for the purposes of study and treatment and the *isolation of all cases of meningitis,* whether tuberculous, epidemic, or sporadic.

"3. The medical inspection and treatment of the ear diseases of school children in school by otologists or by general practitioners under the supervision of otologists."

If the physicians of the country would exert their organized efforts to put into unfailing operation the three simple suggestions of Dr. Love, a very great step would be taken toward the gradual elimination of deafness. But they should also seize every opportunity to urge the extension and improvement of oral methods in the educational treatment of the deaf, and a steady increase in the vocational training open to them.

THE VALUE OF SYLLABLE PRACTICE IN SPEECH READING

BY MILDRED KENNEDY

THE art of speech reading, like other arts, is more easily acquired by some persons than others. Its success depends upon so many factors—good eyesight, a broad vocabulary of words and phrases, intuition, perception, an alert mind—with other qualities so subtle in their manifestations that even a skilled speech reader has difficulty in classifying them when confronted with the oft-repeated question, "What constitutes a *good* speech reader?"

Foremost among the necessary requirements, and one that must not be overlooked, stands the worth of a good instructor—one who has an understanding of the innumerable difficulties that the pupil must encounter in pursuing this study—for the teacher and his ability to present the subject in such a way that each step is intelligent to the pupil, thus keeping alive the interest and determination to understand and master more thoroughly the art, must always stand as the foundation upon which successful speech reading is built.

FOLLOWING THE CHANGES

The process of speaking is composed of a rapid passing of the organs of speech from one position to another. In ordinary speech this change is effected so speedily that the positions, as such, are in most cases almost, if not quite, imperceptible. Therefore the foundation for a skilled speech reader (and in this article the writer is only speaking of persons who have lost their hearing in adult years, after they have a command of language) must lie in one's keenness to follow

intelligently the motions — that is, the changes of the organs of speech—from one position to another.

To train the eye and the mind of a pupil to follow these varied movements, there is no better or more thorough exercise than that which is found in the syllable practice, which makes the Müller-Walle method so thorough in its drill work and so effective in its results.

Syllable practice and its results may be likened to the finger exercises and scales that an earnest pianist practices. The one is just as beneficial for the student of speech reading as are scales and finger exercises for the piano student. They are both drill work, but drill work of prime importance; and as the piano student can make more rapid and intelligent progress by systematic practice on scales and finger exercises, so the student of speech reading can make more intelligent and rapid progress through the benefits of a conscientious, systematic drill in syllable practice. A good teacher of the piano arranges and grades the exercises so skilfully that the progress in the latter goes hand in hand with the progress in the "pieces" the student is learning. Difficult runs, trills, syncopation, triplets, *etcetera,* are all mastered in drills, and then this knowledge is applied in the mastery of sonatas and symphonies.

A DICTIONARY OF SYLLABLES

Just so with the syllable practice in speech reading. Every syllable is a means to an end, and — let it be emphasized here—*no* syllable should ever be given that *does not exist* in actual words. In this important point the Müller-Walle method is clear and exact, for it contains *every possible combination* in the English language. It is as complete a dictionary of syllables as is Webster's dictionary of words. These syllables are composed of one, and occasionally two, vowels in combination with one or sometimes two consonants. As a vowel is considered the most important letter in a word, so the syllable is the key to the whole word.

The writer has made a varied study of speech reading—other methods as well as the Müller-Walle—but the value of the drill work in the syllables as given in the latter school cannot be esteemed too highly. Memorizing long lists of words, spoken in an order that makes no sense, is a nerve-wearing and brain-fagging ordeal; but the syllables strung along one after another, said just as rapidly as the pupil can understand them (and it is the duty of the teacher to increase the speed with which they are said in proportion to the pupil's ability to follow them intelligently) constitute a mental and visual exercise that the pupils both profit by and enjoy.

Teaching in the school has convinced me of this, for often and often the pupils have sat down before me after an hour or more of long, hard practice with others, saying, "Now give me a lot of syllables, just as fast as you can; they are such fun!" They are fun, too, for both pupil and teacher, if they are given with the proper snap, speed, and enthusiasm.

I wish that those who "do not believe in syllable practice" could see an illustration of its use and value as demonstrated in the Müller-Walle school by Miss Bruhn or any of her assistants.

WE STILL CLAIM FORESIGHT BETTER THAN HINDSIGHT

A NEW invention just on the market consists of goggles fitted at the sides with small mirrors to enable the wearer to see what is going on in the rear without turning his head. At the same time there is no interference with a clear view in front. These spectacles have been designed especially for automobile drivers, motorcyclists, and others who find it desirable to know what may be approaching from the rear. A report that there has been a large sale to over-inquisitive lip readers has not as yet been confirmed.

THE EARLY EDUCATION OF YOUNG DEAF CHILDREN*

BY G. SIBLEY HAYCOCK

THE development of a child is determined by two great factors—his nature and his nurture. On his nature, which is predetermined for him by his parents, depend all the possibilities of his development. He has a body which, with its muscular, sensory, nervous, and vital systems, is the basis of his emotional, mental, and active life; he is equipped with a temperament, his "natural character," which consists of certain emotional tendencies; he has a disposition which embraces his active tendencies. The possibilities which lie within him are nature's endowment; their realization, however, depends upon his nurture—those physical, mental, and moral influences which surround him during his infancy and childhood. Only when these influences, which constitute what Sully designates the physical and social or human environment of the child, are favorable can his development proceed satisfactorily and the best of the possibilities that are within him be realized. Of that environment, in the very earliest years the physical part is of the most vital importance, not only to the physical well-being of the child, but to that also of his mind. One needs but to contrast the difference in mental development as between, say, twin brothers, one deaf and the other hearing, in order to realize this. In the case of the child who cannot hear, his deafness, whilst it is a physical condition in himself, in effect causes a profound change in his social environment. Human society is not to him what it is to his hearing brother; his deafness alters the aspect of the whole world to him. The world of sound is to him a world of silence. To us the child is deaf; to the child the world is dumb! It is because the world does not speak to him that the development of his nature is so adversely affected. How many of us really appreciate the tremendous difference there must be between the impressions made upon the mind of a deaf child and those made upon the mind of a hearing child by the same experiences, and how different the respective mental reactions and resultant thought activities are; and, because of these differences, how extremely important it is for the educator to understand what deafness really means to the deaf child himself? To realize the outlook of the deaf child on the world around him—how he sees things, and how they appeal to him—is surely to place one in closest sympathy with him, the first step toward understanding his difficulties and helping him through.

THE BEST ENVIRONMENT

Development, then, so far as it concerns the practical educator or teacher, is a matter of physical and social environment, and agreement is fairly universal that the best environment for all young children is a good home presided over by an affectionate, sensible, and intelligent mother. A child's own mother is his natural educator and none can replace her with advantage to the child, provided that she loves him, has time to attend to him, understands his physical and social requirements, and can provide these judiciously, and treat him sanely. By "a good home" I mean one in which the physical conditions are hygienic, food and clothing suitable, hours of sleep and rest and of play and occupation regular and appropriate, where congenial companionship is available and right moral influences abound.

Whenever such physical and social conditions exist, the child's development—in other words, his education—will proceed satisfactorily. There are, however, circumstances and times when home nurture is unsuitable and inadequate, and in consequence of this, school education is

* Read at the Eighth Biennial Conference of the British National Association of Teachers of the Deaf, Glasgow, Scotland, July, 1913.

needed to supplement the education of the home, if not, indeed, entirely to supersede it.

Opinions differ as to the age at which home education should be supplemented by school education. It appears to be widely held that a hearing child with the right home environment gains no permanent advantage by attending school at the age of three that places him in a superior position intellectually to that of a child who attends school from the age of five. In 1905 the Board of Education instituted an inquiry relating to the age of admission of infants to public elementary schools and the curriculum suitable for very young hearing children. Women inspectors of the board carefully examined some thousands of children located in different parts of the country, and a perusal of their reports reveals complete unanimity that the children between the ages of three and five get practically no *intellectual* advantage from school instruction as given in the public elementary schools. It is, however, made abundantly clear that failure to profit intellectually at school during these years is due more to the unsuitability of the methods employed than to the uneducability of the young scholars. The fact is, of course, that a hearing child in a good home to a great extent educates himself and utilizes the people about him for purposes of self-education. As is well said of him by one of the board's investigators, "His powers of speech have ample practice as he prattles unrestrainedly all day to his mother. He will probably accompany her on her shopping expeditions to the baker and butcher and greengrocer, each of whom is likely to make some observations from which the child profits directly or indirectly. He will come into contact with some animal life by stroking the baker's cat, patting the butcher's dog, and listening to the greengrocer's canary. He will have some useful kindergarten occupation by helping his mother to shell the peas for the dinner; or, if a healthy, active child, he will have to run to and fro while out, thus exercising his limbs and muscles and employing and filling his lungs. In the afternoon, if sleepy, he has a comfortable nap. When he awakes he probably finds a visitor has arrived, quite ready and anxious to answer his interminable questions and to tell him stories and to show him pictures."

One is not surprised to find that the answer given by the Board's inspectors to the question whether hearing children under five should be excluded from school altogether if no intellectual result is obtained, is in the affirmative in the case of children who have good homes and careful mothers. On the other hand, as regards the children whose homes are poor and whose mothers have to work, the introductory memorandum of the report remarks:

"In spite of the drawbacks of school, it is found that in very poor localities the physique of the children is improved by the new regularity of their life. Though fault may be found with the school, yet in the slums, when mothers have to leave the children and go to work, it is better for the babies to attend school than to stay away."

The burden of all the recommendations for these young children is a healthy physical environment with intellectual companionship — plenty of play, sleep, free conversation, and story-telling and observation. There is general agreement that it is unsuitable rather than insufficient feeding that is responsible for sickly children; that want of sufficient sleep, neglect of personal cleanliness, and badly ventilated homes are contributory causes of the low physical standard attained by great numbers of these children.

THE DROUGHT OF DEAFNESS

Now, while it is true that in a good home, with sensible intelligent parents, a hearing child may grow up to the age of five or six years, or even later, with every prospect of his mind and body developing normally, the same cannot be said with equal assurance of a deaf child living under similar conditions, so far, at all events, as his mind is concerned. He cannot educate himself as can a hearing

child, for his deafness nullifies the effect of a large part of his environment; whilst in the case of the deaf child living in a poor home, no aspect of his nurture can possibly be quite suitable and adequate, and consequently his development cannot be fully satisfactory. Taking the case of the child with a really good home environment, although his bodily powers may be well developed, his deafness prevents him from fully utilizing any of the educational agencies which surround him and which serve the intellectual needs of his hearing brother so admirably. In particular, lack of hearing deprives him in a very large measure indeed of that intellectual companionship which is the chief influence in developing the mind of the speaking child. Deaf to the words of his playfellows and other companions, unable to give voice to the vague feelings and thoughts which stir his own little heart, the child of silence is capable of enjoying but a modicum of that intellectual communion with others for which his nature instinctively yearns. Language, as the little hearing child knows it, does not exist for him — language which to a young mind is what rain and sunshine are to the budding flowers of the field! Unrelieved deafness is as a drought, parching the soil of the mind and shriveling up the young shoots of intelligence and arresting their development. By her speech the mother reaches out, as it were, to the soul of her child, awakens it, gives it a life of freedom and activity, endowing it at the same time with power of self-expression, through the exercise of which its progressive development is achieved.

That much can, however, be done by parents and guardians of young deaf children by treating them as though they could hear, and so making them aware of the existence of verbal language; familiarizing them with its use, and helping them to acquire a little of it, is well known. Every parent and teacher of a deaf child should read "A Parent's View of the Early Training of Deaf Children," in *The Teacher of the Deaf* for December, 1911. It is a most inspiring account of what a parent can do in this matter. Incidentally, however, it reveals what, of course, is commonly known—the comparative difficulty of establishing the mental communion of which we speak between the young deaf child and the world around him—and emphasizes the greater care and attention required by him as compared with his hearing brothers and sisters. As already pointed out, a hearing child learns language with little or no conscious effort; but it is a slow and tiring process for a parent to teach language to a deaf child, and few have the time to spare for it. Words must be chosen with care and skill and repeated over and over again. They must, furthermore, be addressed to the eye, and the eye must first be engaged, and that is not always easy. Then, again, many parents consider it less tiresome and quicker to do for their deaf children what they require their hearing children to do for themselves. They have not the time or the patience to train the children to help themselves. It is also found more difficult to interest a deaf child in things than a hearing child, and so he is apt to be neglected; and it is vastly more difficult to train a deaf child to control himself.

NURSERY SCHOOLS

When deaf children are the happy possessors of intelligent parents who provide them with good homes and who can and do give them the necessary care and attention and training, five years of age is in general soon enough for such children to attend school; but when such desirable, or rather necessary, home conditions are not present, then deaf children would, in my opinion, be better at a nursery school at the age of three or four. For such little ones I should like to see small nursery schools established in our large cities, either by the local education authorities or by voluntary or private effort, organized or conducted somewhat on the lines of the free kindergartens which are provided for poor children by voluntary enterprise in some of our large industrial centers. Attendance before the age of five must of course be voluntary,

and for good neighborhoods the hours of attendance might be restricted to mornings only; but in poor localities the children should attend during the ordinary school hours, provision being freely made for allowing them to rest. These nursery schools should not in any case be a department of a school for older children, if such an arrangement can be avoided.

The teachers of nursery schools ought to be qualified teachers of deaf children, but high scholastic attainments are unnecessary. What is needed is that they should speak distinctly, have well-formed mouths, which are easy to lip-read, possess a thorough practical knowledge of speech production and of the development of language. In addition, they should be of a bright and happy disposition, naturally fond of children, sympathetic, capable of exercising both patience and firmness, and nice-mannered.

The rate of growth of the child's brain during the nursery period is very rapid indeed—at seven or eight it is said to have almost attained its full size and weight—consequently it is of the utmost importance that no mental strain should be put upon these very young children. At the ages of three and four the child's activities are chiefly physical; we should therefore let them have plenty of free play, games and dancing, and seek to stimulate their intelligence by kindergarten and Montessori occupations (see "Outline Scheme of Training for Young Deaf Children," *The Teacher of the Deaf*, August, 1912), pictures, stories, nature work, and drawing. Each day's lessons should offer that degree of variety consistent with the needs of the natures of the children, yet being sufficiently long to develop the power of concentrated attention, interest, and effort without fatiguing them. Periods of rest are necessary.

As regards language, most of what is said later on in connection with instruction for children of from five to seven is applicable at this stage.

"The ultimate environment in which the child must live is the environment of the great hearing and speaking world—one of language—and any attempt to prepare the child for surroundings other than this must tend to his permanent limitation and generally to unfit him for the fixed and normal conditions of life."*

The children must therefore be nurtured in an atmosphere of speech; they must have a speech environment, the chief aim of the teacher being first to cultivate an *appreciation* of the spoken language. The young scholars can learn to know the names of their toys, of their fellow-pupils, their teacher, and of the things surrounding them. They can learn to obey the directions of the teacher and to do appropriate actions with their toys and their sense-training materials. Such speech as they attempt should be practiced and made as perfect as possible. Short articulation lessons on the phonetic elements for corrective purposes should be given as soon as the necessary amount of attention and control has been developed.

The rooms should be large, airy, and well lighted, with a sunny aspect. There should be plenty of clear floor space for games, dancing, and marching. A low blackboard should run round two sides at least of the room. Pictures should be hung low, not much higher, if any, than the heads of the children; they should be few in number, large, in simple colors, of subjects interesting to children, and some of them should be changed every week. Light kindergarten tables and small, light wooden chairs of varying sizes should be provided.

There should be toys to which the children can have access during their free play time—plain, strong wooden toys, not easily broken, balls, skipping ropes, etc. A light kind of safety swing would be appreciated, and linen picture books, too, might be supplied.

The room should open out directly upon the playground, or preferably upon a grass plot, where lessons can be taken, or where the children can play and dance and drill when the weather allows.

Provision in the way of lavatory ac-

*("The Intelligence of the Deaf Child," by A. J. Story; Report of the Manchester Conference, 1911.)

commodation should be made for training the children in habits of cleanliness, and opportunities should be afforded each day for the care of their teeth, nails, hair, and skin. Baths such as are provided in some free kindergartens would in many cases be found very useful.

In order that the children may have a rest after dinner, net hammocks, which can be slung, or light trestles should be provided.

A day's program would be somewhat as follows, the subjects varying slightly from day to day:

9.30. Greetings: and Registers.
9.40–10. Nature Work.
10–10.20. Story.
10.20–10.40. Games or Dancing.
10.40–11.15. Lunch and Free Play.
11.15–11.30. Action Lesson (Synthetic Lip-reading).
11.30–12. Sense-training Exercises.
12–12.30. Preparation for Dinner.
12.30–2.30. Dinner; Rest and Sleep.
2.30–3. Preparation for the Afternoon.
3–3.20. Vocabulary (Synthetic Speech and Articulation).
3.20–3.50. Painting or Hand Work.
3.50–4. Clearing Away and Dismissal.

Preparation for lessons and the cleaning and putting away of materials after lessons, and also the preparation for dinner, should be done by the children themselves under the supervision of the teacher.

INTERESTING THE PARENTS

Steps should be taken to interest parents in the work of the school and to inform them as to the proper way of dealing with their little ones when they are at home.

Periodical visits, say once a month, to the homes might do good in a small proportion of cases. In many cases, however, these home visitations would, if made at all, have to be made in the company of the school attendance officer. More good could be done by means of informal meetings of parents held at the school, sometimes in the afternoon and sometimes in the evening, when questions of discipline, language, habits, food, and clothing, care of teeth, hair and skin, sleep and recreation might be the subjects of informal addresses given by members of the school staff and by the school doctor. One day a week should be free to the parents to visit the school or class, in order that they might see exactly how the time is spent and how the little ones are managed.

For the cases of children scattered in rural districts or isolated in small townships, circulars of information drawn up on the lines of the Association's "Circular to Parents," on matters concerning the bringing up of deaf children, should be adopted, detailed suggestions being offered on such topics as are mentioned above as suitable for talks with parents. Besides sending such circulars to parents, I should also send those which deal with educational treatment to the headmistress of the ordinary infant school near the home of the child, to the education officer and the secretary of the local education authority, and to the school doctor or medical officer, with a covering letter recommending that if hearing children are admitted at three, deaf children should also be allowed to attend the school until they attain the age of five. At least the child would profit by joining in the games, the occupations, and the drill, and sharing the companionship of the other young children.

Should nothing more be gained by these measures than preventing parents and education authorities from assuming that young deaf children are impervious to educational influences, and removing such opinions wherever they may be found to be held, I am persuaded that the advantage would exceed the cost and trouble involved. Ignorance and indifference on the part of parents and educational authorities are two of the chief obstacles in the path of educational progress.

EDUCATION FROM FIVE TO SEVEN

Coming now to the scholastic treatment of the young deaf child of from five to seven years of age, I propose to consider briefly the nature of the curriculum suitable for these ages and the methods to be employed.

Bodily and mental powers are inex-

tricably intertwined at all stages of development, and neither can be neglected without adversely affecting the other. The ideal program for a young child would be one which induces the normal development of each power of body and mind at Nature's own time—one which provides that all the child's activities shall be normal as to time, nature, and amount, and shall all work together harmoniously. In the past such educational treatment as was received by the young deaf child was characterized by a failure to synchronize his mental with his physiological development.

Until a few years ago, except in a few isolated instances, there was no educational provision for him at school until he was seven, and then his program was limited to exercises in handwriting and articulation, learning the names of a few objects and actions, and doing two or three hand and eye occupations, and there was not in some schools even so much variety as this. Of mental activity there was comparatively little. Compare the mental content of a deaf child fed on such a dietary with that of a hearing child of seven. Indeed, you cannot compare them. By contrast, the mind of such a deaf child is a blank; and if we would endeavor to promote the normality of the deaf child, so far as is possible, we must take such steps as are needed to give him ideas, to fill his mind with precepts and images, and to insure a stream of consciousness stocked with lively thoughts, feelings, and impulses. We must associate verbal expressions with his percepts and images and encourage to the utmost a healthy intellectual curiosity, a spirit of inquiry, teaching him such words of inquiry and of self-expression as are necessary for his purposes. By such means we may hope to counteract at the earliest possible moment the baneful effects of deafness; by such means, and such means only, can we hope to insure that the intellectual childhood of the deaf boy or girl shall coincide with his or her physiological childhood. An infant mind in the body of a child of seven or eight is not a right and proper ideal. As already remarked, our motto must be mental and bodily activities, normal as to time, nature and amount, working together harmoniously.

Mr. Story, in his excellent paper on the Intelligence of the Deaf Child, read at the last conference of this Association, as well as in other of his recent writings, has dealt fully and lucidly with this aspect of the problem of the education of the deaf child. I pass, therefore, to questions of practical school-room procedure, to consider briefly the nature of the instruction suitable for the period of child life we are now considering.

It should be clearly understood that although for purposes of reference and description I subdivide the training into physical and muscular, sensory, language, speech, lip-reading, and moral, in reality no such actual subdivision is possible. All the exercises are associated with language and all have some effect on the control and conduct of the children.

I like sometimes to think of the child's activities and interests as so many multicolored strands of different textures and values, which the educator has to manipulate in the fashion of a weaver, his exercises playing the part of the threads which constitute the woof of the web of the child's life—here raising an activity into consciousness, there passing it over to give prominence to some other.

PHYSICAL AND MUSCULAR TRAINING

Physical exercise is necessary to the development not only of muscle, but also of brain, of lung, and of heart; it affects beneficially the general nutrition of the body, and further it influences the growth of mind and character. The introduction to the syllabus of Physical Exercises,* issued by the Board of Education, well remarks: "It is especially during the period of growth, when body, mind, and character are immature and plastic, that the beneficial influence of physical training is most marked and enduring."

*See Appendix C, page 161; Physical Exercises for Infants.

Ample opportunity should be provided for free spontaneous movement, chiefly in the form of play; at first largely undirected, but later on partly directed by the teacher.

These controlled physical exercises in addition to maintaining the health of the child, are an indirect preparation for speech, for they are the means of training the attention, bringing the movements of the body under control, developing facility to imitate and a mental attitude of ready response; they develop, too, a sense of time, rhythm, and accent, and they improve the capacity of the lungs.

SENSE TRAINING

Sensations have been described as the material out of which the individual self forms sense ideas and thinks these out into concepts, judgments, and reasons. The appropriateness of the sense-training exercises provided for young children is to be measured by the number and quality of the sensations with which they supply their minds. In order to be satisfactory, the exercises must aim at increasing the efficiency of the individual senses by sharpening the power of sense discrimination in association with manipulative skill, and generally be such as will effect an improvement in the mental powers of perception and observation. It must be remembered that sense knowledge cannot issue in thought of the higher kind unless it is associated with language; hence there must be naming, first, of the sensations themselves, then of the relations existing between the different sensations, and so on, until the mind can pass by means of language from direct sense knowledge to abstract conceptions. By training the eye and developing a facility to imitate movements these sensory and motor exercises are, like the physical exercises, an indirect preparation for speech and lip-reading. Speech as heard sound does not exist for the deaf child; to him the speech of his mother or teacher consists of movements and positions of different organs visible to his eye, and of vibrations of voice and sensations of contact apparent to his sense of touch, and only by the combined use of these two senses can he reproduce speech movements and acquire speech himself; only by seeing the movements on the face and lips of others can he comprehend speech.

TRAINING IN LANGUAGE, ARTICULATION, AND LIP-READING

The teacher must speak, and speak always—clear speech, simple speech, direct speech—first with the object of training the child to learn the purpose and usefulness of speech; secondly, to lead him to appreciate speech—that is, to recognize and understand it—and, thirdly, to encourage him to employ it for purposes of self-expression. Very early this phenomenon of speech has a meaning for the child, and to the extent of its meaning to him it reaches his intelligence and stimulates and develops it.

Shall the teacher at this stage use any other form of expression beside speech? Speech first and last, but if not understood she must *do* what she wants to to be done or to explain; first employing speech, then, if necessary, demonstrating her wishes or thoughts and giving the speech expression again. The "last word" must always be the spoken expression; nor may there be any gesticulations of hands while she is speaking. A teacher of hearing says, "Come, baby," and motions the child to come to her; but not thus may the teacher of the deaf child act. Gesture and spoken word in the case of the hearing child appeal to different senses which may be active simultaneously; gesture and word to the deaf child are addressed each to the eye, and the eye will never see the restricted movements of the lips if the larger movements of the hand are within the field of vision. We cannot combine gestures and speech any more than we can combine sand and water. If we try to do so, speech goes under and gestures come out on top.

Language is to be learned by direct perception in presence of the object, quality, or action named. The language

of the senses—objects and their colors, shapes, sizes, etc.—will be learned during the sense-training exercises. Words of action and of direction and of number will be learned during the muscular, constructive form and number exercises,* as well as during the more direct language lessons, commonly referred to as synthetic lip-reading and action lessons.

Subjective language will be a constant element in the speech atmosphere. Whenever feelings and emotions are aroused, desires and ambitions awakened, then must the subjective expression be forthcoming in simple, plain language.

When a name, phrase, or sentence is known in its spoken form—that is, when it can be lip-read synthetically and is understood—I would have it printed on a strip of cardboard, and the spoken and printed words and the object or idea associated together. This is the first step in reading, and from this simple exercise the child is taken progressively to charts and home-made story books, and ultimately to ordinary story books, the reading matter at all stages being based upon the oral matter of the language and story lesson.

All early spoken and printed language is synthetic; the word, phrases, and sentences are given as wholes and the pupil has *in toto* images of them; he recognizes them as wholes. No matter whether the expression be a single word or a phrase or a sentence, it is in the first place an optic unit. Seen on the lips, there is a series of rapid movements, the chief of which are recognized and remembered by the child, who synthesizes them and recalls them as mental images for purposes of thought and reproduction. The principle of recognition is similar in the case of words printed on cards or written on the blackboard. The child recognizes the expression as a whole. It is a single expression of a simple idea.

The analysis of the synthetic phrases and sentences into separate words, each with an independent meaning, is a process of later growth and development. It is so, too, with the spoken expression. At first recognizing the expression as a united series of facial movements, the child later on, especially after he has done some synthetic reading of printed or written language, picks out and identifies separate words, and bye and bye he is able mentally to fill in the words and even single-sound syllables which the eye fails to see.

It is only by insisting upon the principle of the optic unit that speech may be made a reliable means of communication between the teacher and the young child. A slow utterance, separating the words widely, destroys the usefulness of this speech and increases the difficulty of understanding it tenfold.

As soon as the children have advanced in muscular control to manage their chalks they write the words, phrases, and sentences on the blackboard and later on into their books.

INSTINCTIVE SPEECH ATTEMPTS

In the first instance we are satisfied with an *appreciation* of the spoken language which we present to the child. We do not demand its reproduction until later, but if he offers the spoken words spontaneously, and most of them do offer some of them, we accept them gladly. Are we wrong in doing so? Would you rather have us say to the child, "Sh! don't talk. You are a baby." Is that how you treat your own little hearing friends? I think not. You say, however, that this early speech of the deaf child is defective; true, but so is that of the hearing child. Still you urge, "A hearing child will naturally correct his own speech." True again; and in the case of the deaf child the teacher must faithfully do for the deaf child what he by reason of his deafness cannot do for himself. Believing as I do that the young child has an instinct for speech, and that if he is nurtured in an atmosphere of speech, that instinct will assert itself, it would be highly illogical on our part

*See the writer's Outline Scheme of Early Training for Young Deaf Children.

were we not to accept his instinctive attempts at speech, partial and halting though they be. We must take these spontaneous attempts as they are and accept them for the time being, meanwhile taking such steps as will bye and bye enable the child to perfect his utterance until through constant repetition a habit of partial speech is acquired. What steps should be taken? From the first we should seek to develop in each child a good voice, selecting for that purpose the vowel which he can pronounce in the most natural and tuneful manner and work from that. Breathing capacity should be developed in the physical exercises, and special lessons given to secure control and practice economy for speech purposes. Should the voice be unsatisfactory, the consonants may be taught first, beginning with the breath sounds; but as soon as the voice is good in tone, pitch, and volume, vowel elements may be learned and practice given on easy syllables. We do not build up long lists of meaningless syllables, but select by preference such as form real names of things, qualities, and actions of interest to the child. Apart from the executive skill gained by this simple syllabic work, it serves as an introduction to systematic exercises in accent, emphasis, and phrasing.

All this time the little child is offering synthetic speech, and as soon as he learns a phonetic element the teacher requires that that element, wherever it occurs in synthetic speech, shall be perfectly enunciated, and she insists on it being embodied in the word attempted should there be a tendency to omit it. Thus the work on the elements of speech serves the purpose of making good the deficiencies in the synthetic speech. Very soon progress in the elements justifies the teacher in encouraging a larger response of synthetic language and he obtains not mutilated speech, but a speech which is both intelligent and intelligible. It should, however, be clearly understood that there must be a good deal of repetition of these early speech forms. The children must be drilled in typical words until their articulation is as exact as can be. Beside this precision in articulation, other qualities aimed at are naturalness, ease of production, a pure vocalization, and correct accent, all of which qualities make for intelligibility.

Briefly, then, our procedure is: Synthetic speech reading, inducing oral response on the part of the child; careful teaching of the individual elements, deliberate cultivation of this synthetic oral response, with phonetic correction as is required. At first the teacher's active ear does duty for the child's deafness, and gradually she seeks to give the child such precise knowledge of phonetic positions, pressures, and movements as will enable him to regulate his articulation for himself. In this way, as Mr. Story has said, we can compensate the child for the inactivity of his own ear.

With regard to the question of appreciation of written language by the young deaf child, it is interesting to recall that so long ago as 1680 George Dalgarno, a native of Aberdeen, wrote these words, "Taking it for granted that deaf persons are equal in the faculties of apprehension and memory not only to the blind, but even to those that have all their senses, and having formerly shown that these faculties can as easily receive and retain the images of things by the conveyance of figures through the eye, as of sounds through the ear, it will follow that the deaf man is not only as capable, but also as soon capable of instruction in letters as the blind man. . . . Therefore, I conceive there might be successful addresses made to a dumb child even in his cradle, when he begins, if the mother or nurse had but as nimble a hand as commonly they have a tongue. For instance, I doubt not but the words *hand, foot, dog, cat, hat,* etc., written fair, and as often presented to the deaf child's eye, pointing from the words to the things, and *vice versa,* as the blind child hears them spoken, would be known and remembered by the one as the other."

A SPIRIT OF ARTICULATE INQUIRY

We have spoken of the need of developing a spirit of inquiry in the deaf child. How can that spirit be made ar-

ticulate? By using from the beginning simple question forms in association with all aspects of sensory and motor activity. In the earliest days the little learner will gesticulate; but the teacher must speak, and show, and act, and speak again and again. And if the teacher be consistent and persevering and faithful, it is surprising how soon the child will begin to ask by word of mouth, *What? Who? For whom? For me? For you? Where? What for? Why? How many? Have you?* In the presence of the circumstances which give rise to any inquiry, such question words are all that are necessary to begin with. The teacher must use her discretion as to when she will require fuller question forms. The only risk of going wrong lies in the failure of the teacher to require the child to use such enlarged expressions as correspond to his advances in knowledge and power. A child having learned to use the expression, "What for?" should not be allowed always to confine himself to that expression. Bye and bye it must be enlarged into "What is it for?" And so with the other question forms. One safeguard will consist in the teacher herself avoiding the use of stereotyped, formal truncated forms of inquiry. She must be natural in all her expressions, being guided very largely by what she would say and do were her pupil a little hearing child. Her questions should be full, with emphasis on the essential question-word, sometimes allowing herself to repeat the essential question-word separately—*e. g.*, What is it *for? What for? What* is it *for?*

Long before some of the children acquire an oral vocabulary they will be able to express themselves graphically on the blackboard. This form of expression should be encouraged to the utmost. Drawing is not only good hand and eye training, a first-rate exercise in observation, but it is natural language. So I encourage the children to draw what they see out of school hours, and very soon they ask for both the oral and written name. Their drawings, too, become the best possible centers for conversations, for they are points of personal interest to the children.

Drawings and illustrations, in addition to the actual things—qualities and actions themselves—are associated with the spoken, printed, and written language, and a combined manual and language exercise is provided by allowing the little one to cut out illustrations from catalogues and paste them in their language books.

NATURAL LANGUAGE DEVELOPMENT

Time and space only permit me to mention two of the "lessons" given at Fitzroy Square for the purpose of developing language on natural lines. When the names of toys are learned, appropriate actions are performed with them. In connection with a tea-set, for instance, the children learn to lay the table and to pour out tea, to add sugar and milk, and hand the tea round to others. In connection with the toy bath, they learn to obey directions to fill the bath with water and fetch soap and towel and give Dollie a bath. The personal belongings of the children, too, are made the subjects of little talks, and in general all the interests of child life furnish material for conversation.

Our chief lesson to preserve and develop the speech instinct of our little ones is the story lesson. For details I must refer you to the pages of the *The Teacher of the Deaf,* where I have described at length our manner of telling a story to deaf children. The example given is the story of the Three Bears, and an account is given of how, with the aid of a set of simple home-made pictures and cardboard figures of Goldilocks and the bears, we bring before the minds of the children the main elements of the story. Other stories which have been told in this way are "Rose Red and Rose White," "Little Miss Muffit," "Jack and Jill," an original story of a day at a farm, and one on home life. The story for the month is told each morning in the simplest possible language. Reproduction by the children is not aimed at; the main objects we have in view are the stimulation and keeping alive of the

speech instinct, which prompts spontaneous response, interesting the little ones in those fascinating stories which all children love and which later become the subject of their reading lessons, furnishing their minds with connected sequences of ideas and so promoting their mental development and intelligence. Not least of all in importance is the training given in lip-reading and in making clear the usefulness of speech. Our experience leads us to believe that these stories are of considerable value in developing a ready understanding of spoken language.

MORAL TRAINING

Character building is not to be lost sight of. A developed intelligence is essential to a good character, and all that is done to stimulate the minds of the children helps forward their moral development. Manners and morals are inculcated by example. The teacher's example is the child's chief guide. The essential thing in the teacher is a sympathetic manner and a gentle yet firm guidance. Cleanliness and tidiness will be inculcated by keeping the room clean and tidy, with the assistance of the little ones; orderliness, by having a place for everything and keeping things in their places. The children will learn to be tidy only by practicing tidiness. Trustfulness on the part of the teacher will lead to truthfulness on their part, and by kindly treatment when things go wrong the teacher will win the children's trust and she will become their confidante. Repression, on the other hand, induces secrecy and a tendency to deceive arising from fear. By giving each child some little daily duty to perform a sense of responsibility is developed. Care of the toys and furniture and of personal belongings will need to be insisted upon. The bird and the plants and flowers will require the care and attention of the children each morning, and thus serve to promote kindness to animals and a love of natural things. In these and other familiar ways moral habits are built up and good feelings engendered.

An attractive field of educational work, of deep human interest and rich psychological value, promising fruitful pedagogical results, is thus seen to lie before those who undertake the education of the young deaf child! May the laborers be worthy of their hire!

AMERICAN ASSOCIATION TO PROMOTE THE TEACHING OF SPEECH TO THE DEAF

THE annual midwinter meeting of the Board of Directors of the American Association to Promote the Teaching of Speech to the Deaf was held on December 27, 1913, at the Pennsylvania Institution for the Deaf and Dumb, Mt. Airy, Pa.

Officers of the association were elected as follows:

President, Caroline A. Yale.

First Vice-President, Edmund Lyon.

Second Vice-President, David G. Fairchild.

Secretary, Z. F. Westervelt.

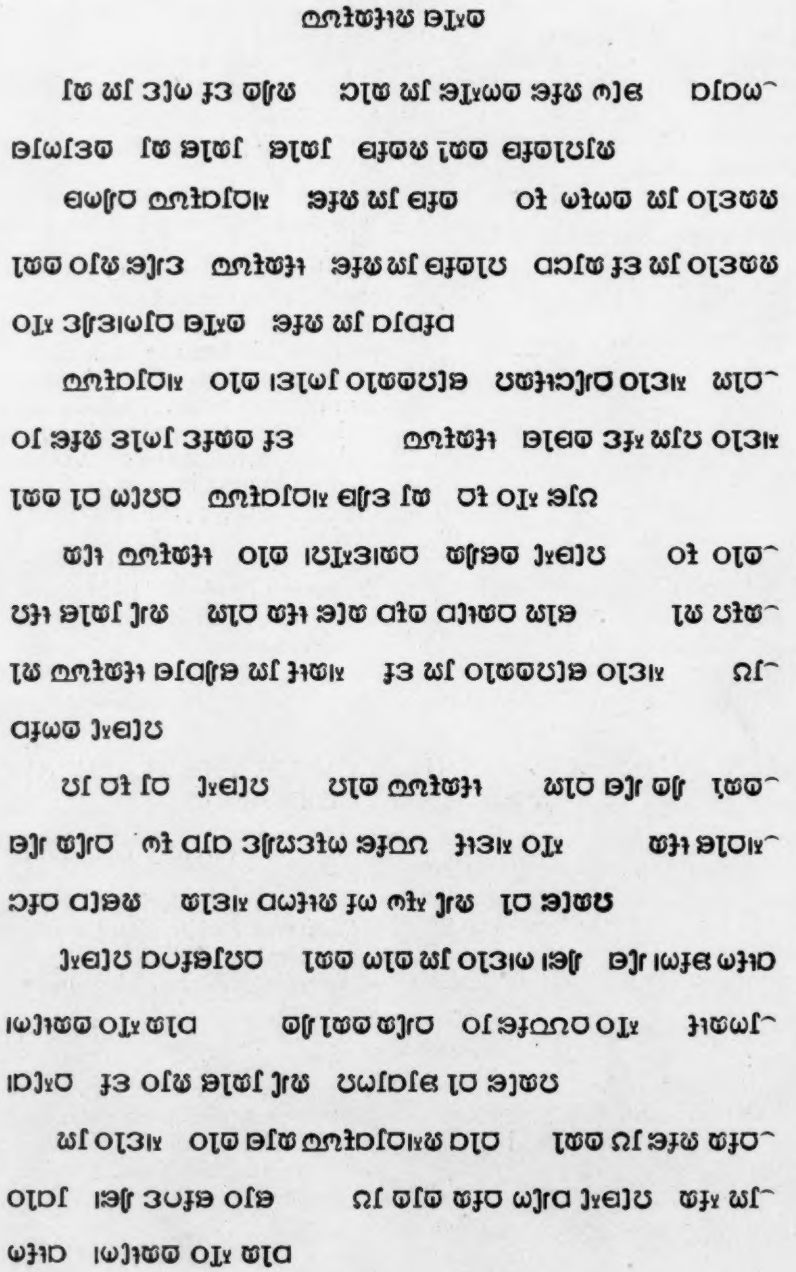
General Secretary and Editor, Ernest Gregory.

Treasurer, Frederick Eichelberger.

Chairman Publication Committee, Alexander Graham Bell.

Superintendent Volta Bureau, Fred De Land.

The annual reports of the Treasurer, General Secretary, Superintendent of the Volta Bureau, and chairmen of the various committees were presented and approved. Plans for the coming year were outlined and the usual routine business transacted.

PHONETICALLY WRITTEN STORIES IN MELVILLE BELL SYMBOLS

JUNO'S BIRD